The Veterinary Record.

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

NO. 3. JANUARY 18, 1930. VOL. 10.

The Veterinarian and some of South Africa's Little Problems*.

By R. PAINÉ, F.R.C.V.S., Grahamstown, South Africa.

Allow me to thank you for the honour conferred by your invitation and to express the hope that the above subject will interest you and possibly stimulate some thoughts of value.

I propose to refer briefly to the wonderful progress which the live stock industry has made in South Africa during a comparatively short period, in spite of three great obstacles, namely, droughts, wars, and animal diseases.

If one remembers that only a little over a hundred years ago there was a thin white line extending along the coast trying to effect a settlement in this country against overwhelming odds, that the first railway from Cape Town to Wellington was not started until 1859, that at the present time we have over 10,000 miles of railroad in the Union of South Africa, a railway system which is probably the finest of its type in the world, that we have established a premier place in the world for our wool industry, that we are actually exporting pure-bred cattle to Europe, then one has to stop and ponder.

No country without huge natural resources and a most virile population could have achieved such results, and one does not hesitate to state that the progress will be maintained to still greater heights, of which at present we do not dream.

Let us consider a few figures:—

In 1904 there were 3½ million cattle in the Union of S.A.
,, 1927 ,, ,, 10½ ,, ,, ,, ,,
,, 1904 ,, ,, 16½ ,, sheep ,, ,,
,, 1927 ,, ,, 40 ,, ,, ,, ,,

Value.
,, 1900 27½ million lbs. of wool were exported, £887,807
,, 1927 260 ,, ,, ,, ,, £17,117,948
,, 1909 maize to the value of £650,940 was exported.
,, 1925 ,, ,, £5,669,405 ,, ,,
,, 1927 there were about 100 cheese factories in the Union making six million lbs. of cheese, whilst there was a further 24 million lbs. of butter manufactured. According to the 1926 census our agricultural products were worth £70,000,000, mines £59,000,000, other industries, £90,000,000.

Now let us glance at that most interesting neighbour of ours, Southern Rhodesia, and see what changes we shall find in an area which only a few years ago was one vast native area.

In 1927 there were 5,816 Europeans and 83,935 natives employed on farms, in 1917 the Europeans owned 532,311 head of cattle, natives 551,632; ten years later the Europeans owned 954,835, of which 11,761 were pure bred, the natives 1,370,567—over 100 per cent. increase in ten years.

In 1927 Southern Rhodesia exported 42,744 head of cattle, £173,004 worth of hides, and 3,080 pigs. She produced 1,711,559 lbs. of butter, 99,368 lbs. of cheese, and £178,000 value of dairy produce.

The estimated value of her net agricultural output was £4,156,000.

The estimated value of her net mining output was £3,232,000.

Can there be any doubt as to the prospect of a country which can put up such a record? We must feel proud of our relationship to it. Indeed, Sir William S. Haldane in an article to *The Times* on "Food and the Farmer," after dealing with the increasing scarcity of beef, writes: "South Africa may be able to do something in the dim and distant future, her cattle steadily growing in numbers, though meanwhile of little use for our beef supply. Southern Rhodesia, however, is grading up increasing herds, and ere long may make us a useful contribution from her two-million cattle, and have her reward."

I mentioned three great obstacles which have been encountered, namely, droughts, wars, and animal diseases.

With regard to the first, some pessimists ridicule the idea of South Africa ever holding a prominent place in agriculture, on account of these droughts. Such individuals do not yet realise the vim, determination and originality of the South African race. These droughts, of course, give rise to great problems, but no worse than have been faced in the past, and solutions according to the local factors must eventually evolve.

This country has been a most unfortunate one with regard to wars, native and European, and we can only hope that future politicians will prove themselves more capable than their predecessors in evading strife by sound diplomacy and just legislation.

Again, the country has had an exceptionally severe experience of the ravages animal diseases can cause, and I think that my profession can claim to have done sounder preventative work in this connection than the politician has in his department.

The veterinary profession has now become what we may term "the first line of defence," and, as will be seen later, the diseases encountered have been of such a virulent nature that preventative medicine has become one of primary importance.

Let me first detail a few of our worst scourges, which, together with droughts, accounted for 682,771 cattle and 4,290,287 small stock in the period 1926-1927; later I will deal with the machinery we have to combat them.

RINDERPEST.—This is usually the first infection of which one thinks. This disease spread from Asia into Europe in the early part of the 17th century, where it is estimated to have killed 200 million head of cattle; it was stamped out of Great Britain in 1877 at tremendous cost, it reached Egypt in 1841, and gradually extended southwards, the first case in Southern Africa being reported on March 3rd, 1896.

* Paper presented to the Scientific Society of Rhodes University College, South Africa.

DEPT. OF VET. MEDICINE

By the end of March, 1898 (two years later) it was estimated to have killed half-a-million cattle in Southern Rhodesia, in 1897 the Transvaal lost close upon a million head, whilst 1,300,000 died in the Cape Colony between 1897-1898. It was introduced into British Protectorate in January, 1896, from Northern Rhodesia, and killed 95 per cent. of the cattle, the estimate being about two million head.

Urgent measures were taken to ascertain the true nature of the infection. In those days we had to send to Europe for assistance, and Professor Koch, assisted by South African workers, evolved a system of preventative inoculation; but by this time the disease had spread throughout South Africa, and it was only by the dogged work on the part of the field staff, lead by Hutcheon and others, that it was eradicated in 1903.

With rinderpest, the profession was faced by an unknown invisible virus of intense virulency, and although it still exists in Central Africa we have prophylactic measures at hand which can be enforced in case of emergency, so we will pass on to the next pest.

Pleuropneumonia of Cattle, or Lung Sickness.

This European disease was introduced from Holland into Cape Colony in 1854; it extended rapidly northwards, the first case in Rhodesia being seen by the Rev. Moffat in 1859.

Again the death rate was enormous, and again a new practically invisible virus had to be dealt with. Cultural methods failed. Annoying relapses occurred in areas which had apparently been freed from infection, until later it was discovered that some of the cases which had to all appearances recovered were still capable of spreading the infection. A fairly satisfactory method of preventative inoculation was instituted and many cattle were saved by its use, but later on more rigid measures were adopted, namely, the destruction of all diseased and in-contact animals. Southern Rhodesia was freed from infection in 1904, the Union in about 1917; unfortunately, it is still present in Bechuanaland, where it has existed since 1860. Subsequent to 1909 it was eradicated from the Southern Protectorate, but persisted in the north—the last case occurred at Letlokhane, on the Lake road, in May, 1928. For many years the loss in British Protectorate amounted to £1,000 p.a. in animals, and more than double that amount in indirect loss caused by quarantine restrictions, loss of market, etc. The present position is considered quite satisfactory.

The extent to which preventative inoculation was carried can be realised by the following figures compiled from work carried out in the Transkeian Territories only:—

In 1906, 5,062 were inoculated; 1,080 head died or were destroyed.

In 1907, 14,696 were inoculated; 1,821 head died or were destroyed.

Anthrax.

In this disease we have an infection which has existed in South Africa and, for the matter of that, all over the world, for many years. It is a most dangerous human disease, frequently fatal and easily acquired, causes heavy losses among stock, and remains active in grazing or other material for many years.

It has been extensively studied, and although eradication at one time seemed impossible, it is not considered so to-day.

Some idea of the losses it entails may be gathered from the following figures, which are only roughly approximate:

Between June 30th, 1903, and June 30th, 1925, the following details were recorded:—

Cape Province	3,662	outbreaks,	15,611 deaths.
Transkei	3,272	,,	deaths not known.
Natal	1,118	,,	3,088 deaths.
Orange Free State ...	2,407	,,	13,515 ,,
Transvaal	7,928	,,	13,448 ,,

Fortunately, after a most intensive study an excellent vaccine has been discovered, which is now issued *gratis* to all stock owners in the Union. Up to 1928, seventeen million doses have been issued, and during the last five years at the rate of between two and two-and-a-half million doses annually, the cash value being £30,000, with an estimated saving of half-a-million cattle a year.

With the eradication of anthrax in animals we will have materially assisted in the elimination of a serious human danger, especially amongst those people who come in contact with hides, wool, and bones.

Glanders.

Although present in South Africa before the last Boer War, this serious European disease was undoubtedly spread far and wide by military movement, so that at the close of the Boer War it was prevalent throughout the country.

The gravity of the disease, apart from the stock losses it caused, lay in the very malignant form it takes in the human subject, and probably many human deaths from so-called pneumonia at that period were really due to this infection. Those working in the field at its eradication knew only too well the risks attendant upon their duties, and I feel that sufficient credit has never yet been given to them for the results they obtained at considerable personal risks. The disease has since been almost eradicated from South Africa, save for a few cases occasionally detected in the Cape Peninsula.

East Coast Fever.

This disease has the honour of being the pest *par excellence*, and it came in from the North with a rush.

In 1900 a thousand head of cattle were introduced at Beira from Australia; they practically all died from redwater and anaplasmosis; in fact, only two survived, and were sent to Salisbury, where they died from East Coast fever. In 1901 cattle were introduced from German East Africa to Umtali and Salisbury for slaughter purposes. At both centres the local cattle began to die rapidly; the losses extended in all directions, especially along the main transport roads, the average mortality being about 96 per cent. of those infected.

The losses in the first two years were over nineteen thousand head in Southern Rhodesia, and, according to records, it reached 28,341 head in Southern Rhodesia during the years 1903 to 1921. It spread rapidly to the rest of South Africa, and, according to the Select Committee appointed to enquire into the disease in 1920, "It had cost the country, and cattle farmers especially, millions of pounds."

In the meantime, research officers were working at high pressure to ascertain its causation, method of infection,

and preventative measures. Naturally some errors were made at the start, which became classical, but very excellent and painstaking work was carried out for many years, whilst the field staff did their unpleasant and onerous duties in the field, which necessitated most irksome and unpleasant restrictions in the infected areas, and these usually brought little or no credit to the officer concerned.

A method of preventative inoculation was employed in the early days, mainly in the Transkei under the control of Senior Veterinary Officer Spreull. In this area up to 1914, 283,000 cattle were immunised, with an average loss of 45 per cent. Although this method involved a heavy loss, it was heartily welcomed by the native owners, and it checked the disease, until cattle tanks could be erected and the dipping machinery put into action.

At the present time all East Coast fever areas are well supplied with cattle tanks, and an enormous staff is employed to see that all stock are rigidly dipped at regular intervals, which intervals have been accurately worked out to ensure the destruction of all ticks which are the intermediate hosts. The disease is being rapidly exterminated in the Union, whilst in Southern Rhodesia the fresh outbreaks have been reduced from 20 in 1927 to only 3 in 1928. Further, whereas, in 1927, 31 areas were taken over as infected, in these areas in 1928 there were 45,000 head of cattle, amongst which only one case of East Coast fever occurred.

In Southern Rhodesia there are at present 2,895 cattle tanks dealing with 2,445,521 head of cattle, and there is no doubt that with perseverance the infection will eventually be eradicated from South Africa, although it is still very widely spread and is endemic in Central Africa.

Heartwater.

Probably no infection is of more importance in this particular portion of South Africa. Until recently of undiscovered origin, it has lately been shown by Dr. Cowdry, of America, to be caused by a Rickettsia related to the human disease called "Rocky Mountain Spotted Fever," which is transmitted by the Wood Tick.

The disease has been extensively investigated by Lounsbury, Robertson, Theiler and Spruell; it is widely distributed, and with the extension of tick infestation a few years ago it wiped out the sheep industry on the coastal belt, causing an enormous drop in land value.

The indirect losses have been inestimable, and it is only by steady and very thorough work that the infection is being pushed farther and farther back. There is no doubt that huge areas of beautiful sheep veldt, which should be bringing handsome profits to the owners, are at present being wasted on scrub cattle, and these areas can with thorough measures be brought back eventually to their correct standard.

Further, the discovery of the causal agent may assist in the elucidation of Rocky Mountain fever.

Redwater and Anaplasmosis.

Both these diseases are transmitted by the Blue Tick. They came down south through Zululand and along the coast in about 1875; at one time they almost exterminated the cattle in the coastal areas. It is naturally impossible to give any estimate of the direct losses incurred, but again the indirect losses have been enormous, for not only were all cattle liable to a heavy death-rate, but all introduced cattle were much more susceptible, so hindering the improvement of local herds by the introduction of pure-bred sires, etc., and at a great risk.

A satisfactory method of immunisation has now been worked out. Since 1911 a quarter-of-a-million doses of vaccine have been issued, and the inoculation, supplemented by regular dipping, has considerably reduced the risk of infection and has even removed it entirely from many areas.

The Tick Pest.

It would probably have been more correct to have summarised the last four diseases under this heading, but other infections, such as tick paralysis, equine biliary fever, canine biliary fever, and probably several others at present not definitely determined, are also carried by ticks.

So much has been written upon this pest that it is unnecessary to enlarge upon it here; in fact, it would occupy the entire period to do justice to it; suffice it to say that, apart from the diseases dealt with, it causes much indirect loss, and is one of the major pests still to be eradicated, and it is to be greatly deplored that more energetic steps are not being taken in some of the badly-infested areas.

In this connection it is impossible to omit reference to the gigantic investigation work which was carried out by Lounsbury, Robertson, Theiler, and Watkins-Pitchford.

Lamziekte.

This is another most serious pest, spread more or less throughout the subcontinent, and only recently clearly understood. Hutcheon carried out wonderful field observations, and Theiler brought the question to a culminating point by most profound and intricate investigations. The direct losses have been tremendous in many areas, whilst the indirect losses are inestimable. Although we have had definite evidence for many years showing the value of bone meal as a preventative measure, it was only of more recent years that it was plainly shown in what way it prevented the craving for infected material.

We now know that this preventative measure is of practical application, that it ensures freedom from infection, and that it repays handsomely by reducing mortality, increasing development, increasing milk yield, improving the quality of carcases, and even hides, and by even increasing the birth rate.

Scabies in Small Stock.

A pest known from time immemorial; considered by many at one time to be a divinely-inspired pleasure for the stock.

Although not causing a heavy mortality as a rule, this pest has undoubtedly cost South Africa many millions of pounds. Of recent years the administration of the regulations has been passed over from the Scab Division to the Veterinary Division, and already firmer and more thorough measures have yielded splendid results. It is only necessary to state that in the course of a few years the country will be free from infection at the present rate of progress.

Rabies or Hydrophobia.

Although not responsible for a heavy mortality in stock, one cannot omit this extremely serious infection, especially in view of the fact that cases in the human subject and in some of our wild animals have recently been noted in South Africa. Having personally seen the dog which was

responsible for the huge outbreak in England some 30 years ago, attack two other dogs in the course of a few minutes, and then proceed on his joy run until checked probably miles ahead; and having witnessed the serious results of this outbreak, I deem the question to be one of considerable moment.

The disease was noted in Port Elizabeth in 1893, and although it spread to the adjoining districts of Uitenhage, Jansenville, Willimore, and Albany, by strict measures it was eradicated in about twelve months, during which period some 2,000 stray dogs were destroyed.

In August, 1902, it was diagnosed in Southern Rhodesia. On November 23rd, 1902, the police reported the destruction of 9,483 dogs; 32 dogs were visibly infected and 14 people were bitten; up to the end of March, 1904, 60,000 stray dogs had been destroyed. Dr. A. Low, of the Pasteur Institute, came out in October, 1902, confirmed the diagnosis and established an Institute for preventative treatment.

It is to be deeply regretted that the fears of our earlier veterinarians have been realised, and that recent outbreaks show that infection has now become firmly established in our wild fauna. Since 1916 a number of typical cases have been noted in the human subject in the Union, and an area stretching from Eastern Transvaal to Bechuanaland in the west, and northern Cape (DeAar) in the south, and the entire Free State, is now considered infected.

The yellow mongoose ("*Rooi meerkat Cynictus penicilatta*") and the genet cat ("*Muskejatkat Genetta felina*") are widely infected, and human beings, especially children, are obtaining infection from them. Of course, these animals can transmit to other wild and domesticated animals, so the question at the present moment is decidedly grave.

There are, of course, many other minor conditions which hinder the live stock industry, and this article would not be complete without reference to the wonderfully efficacious treatment worked out for wireworm in small stock, mainly by Green and Veglia. It is only necessary to state that 107 million doses have been issued, and the treatment has enabled South Africa to take the premier place in the world in dealing with this most serious pest. I must mention malignant catarrhal fever (blue tongue) of sheep, for which over 23 million doses of vaccine have been issued; further, we must not forget nagana (tsetse-fly disease), which caused losses to settlers in Zululand estimated at £100,000 p.a., until a treatment was worked out reducing the mortality from 95 per cent. to 16 per cent.

History of the "First Line of Defence."

However, I trust I have succeeded in proving to you, without painting too terrible a picture, that this country has encountered a few rather costly pests to stock; and I propose now briefly to refer to the history of our "first line of defence" and its present constitution.

For many years the only veterinarians in South Africa were those on the military staff, the first officer being Thomas Burrowes, who was sent out to his regiment (8th light Dragoons) in 1799, then at Cape Town. Subsequently, up till 1881, there were approximately 35 army veterinarians stationed in the country, and they took part in all the principal campaigns. Amongst these Imperial officers we find the highly-esteemed names of Sir Francis Duck, who eventually became Director-General of the Army Veterinary Department, and Sir Frederick Smith.

In the meantime, Wiltshire came to Natal in 1874, Professor Branford in 1876 (under a three-years' contract), and subsequently those well-known and respected officers, D. Hutcheon, in Cape Colony, in 1880; Sir A. Theiler, in the Transvaal, and Henning, in the Free State, in 1896.

The Veterinary Division from these dates was gradually developed, and when the Union of South Africa was established, Gray became the first Principal Veterinary Officer, and Theiler the Director of Veterinary Research; whilst in Rhodesia at that time Sinclair was the Principal Veterinary Officer and Bevan the Director of Veterinary Research. The latter officer is well known for his original work upon horse-sickness, bovine contagious abortion and trypanosomiasis.

In Bechuanaland Protectorate no Veterinary Service existed prior to 1905, when Chase, the present Chief Veterinary Officer, was seconded for duty from the Cape Province, primarily to safeguard that territory from East Coast fever. The Protectorate covers 300,000 square miles and is dependent upon its cattle industry. Since 1905 this Division has been developed and now has an annual vote of £20,000. The staff consist of six Veterinary Officers, one Dairy Expert, thirteen Lay Inspectors, and thirty Native Inoculators.

Subsequently the two Divisions in the Union Staff, *viz.*, Field and Research, were merged into one, and the present Director of Veterinary Services and Animal Husbandry, Dr. du Toit, was appointed. This amalgamation was, of course, only common sense and brought the two Divisions into one compact whole. In the past some of the older type of veterianarians were not apparently able to appreciate the rapid progress made in their science and the value of microscopic work; in fact, the name of "Brass tube men" was actually applied by them to some poor individuals who imagined that the microscope might enable them to appreciate details beyond their natural vision.

It is to such "Brass tube men" that we must attribute the great progress which has been made, and Grahamstown should be proud of having had the acquaintance of one of the foremost, *viz.*, W. Robertson—a most loveable character, a true friend to his colleagues in time of need, and one whose death was a great loss to the profession.

As an old field officer I wish to acknowledge the great assistance we receive from the Research Division and to express my admiration for their achievements. Thanks to the foresight of our statesmen, veterinary research work has received substantial support, and to-day South Africa has, at Ondersterpoort, one of the finest laboratories in the world. This institution has recently had the honour of having all research work in the Southern Hemisphere detailed to it by the Imperial Government.

A glance at the present strength of the Veterinary Staffs in the Union and Southern Rhodesia is also of interest. In the Union the Director has a staff of 75 Professional Officers, about 800 Lay Inspectors, and Clerical Assistants, whilst in Southern Rhodesia the Principal Veterinary Officer has 12 Professional Officers, 44 Grade Cattle Inspectors, 57 Temporary Cattle Inspectors, and the Director of Veterinary Research, which is a separate Division, has one Research Officer, and three Lay Assistants.

One naturally wonders what is to become of the profession when the climax of their apparently absurd suicidal policy (*viz.*, the eradication of all stock diseases) has been attained. For one thing, experience teaches us that in South Africa previously unknown infections are only too apt to choose it as a happy hunting ground, and no doubt there are many harmless organisms which for some unknown reason will develop a kink and adopt pathogenic characteristics. We must be prepared to deal with them before they have a chance to do the damage their predecessors have done. Again, life is becoming more intense every day, and what are now minor troubles will in the future assume major importance and require detailed attention.

There are also duties which are either entirely neglected or only dealt with in a most perfunctory manner, except at the larger centres, especially meat and dairy inspections. At the larger centres the former is left entirely in the hands of my profession, for naturally one of the primary requirements in meat inspection is a very thorough knowledge of the normal condition of animal carcases, and then a complete knowledge of the pathogenic changes in such carcases caused by diseases peculiar to each species; for we must remember that even with the same infection the changes vary enormously with the species attacked. Finally, we have the importance of such changes to the consumer.

The veterinarian is not expected, as a rule, to express an opinion upon a human pathological condition, and we cannot fairly expect a medical man to express an opinion upon pathological changes in animal organs when he is comparatively ignorant of their normal appearance and has not studied the diseases to which these species are subject. Further, those of us accustomed to dairy work are well aware of the normal conditions under which dairy cattle are housed, fed and handled, the way under which milk is collected; we are also aware of the various improvements which may be necessary to prevent contamination of the milk and the production of a pure article. Personally I feel that there are many serious risks in the almost universal consumption of raw milk and its products which are entirely overlooked, not only from the animals being diseased but also from outside infection; surely such supervision should be under the control of those who have made dairy stock in health and disease part of their life study.

Further, I do not agree with some authorities who consider that, in the absence of private practitioners, official veterinarians should not deal with diseases of a non-contagious character. I feel that such authorities are still restricted to a European outlook and have not acquired the wider aspect necessary in South Africa. The conditions here are such that for many years remunerative private practice, except in a few congested centres, will not be possible, and it is absurd to think that elsewhere professional assistance is not to be rendered if available.

In the majority of cases such assistance is of indirect value to the State, and many of us know from experience that attending to such requests bring us into contact with a large percentage of our outbreaks of contagious disease; and so to the discovery of new infections.

Our present-day and future graduates must not forget that it was by assisting the strongly-prejudiced old-fashioned owners with ordinary clinical cases that their predecessors have smoothed the way for their professional careers in South Africa to-day.

There are many huge problems looming in the distance, such as tuberculosis, poisonous plants and their effects, parasitic infections, plant foods and their relative values, South African dietetics, etc., etc.

In conclusion, I trust that you will realise that I have not enlarged upon this subject with the immodest object of lauding the achievements of my profession in this subcontinent, but in order, firstly, to prove what South Africans have done in spite of huge difficulties, and to hold such progress up as an example to their successors, and, secondly, to establish the economic value of research work. Huge sums have and are being spent upon Veterinary Services in South Africa (1927-1928, £428,385), but the expenditure has been repaid again and again in its results directly to South Africa and indirectly to the whole world.

It is not necessary to go far afield to find valuable results from sound research work, for at this institution, amongst your other great achievements, you have the example of what Dr. Duerden and his staff have done for the ostrich and wool industries. I trust that many more important questions will come your way to prove the high value your University is to this land.

Progress can only be made by true and accurate knowledge of the sciences, which must receive liberal support in their investigations. Surely the results already obtained will strengthen your requests for financial assistance in all your various sciences, and although South Africa has made great progress in the past she looks to you, as her future scientists, to keep up the pace and to advance her position still more in the scientific world.

References.

Veterinary Record, May 25th, 1929.
Sinclair, "*Short History of the Infectious Diseases.*"

Third International Goat-Breeding Congress.

The following questions will be treated at this Congress, which will be held at Antwerp on August 13th and 14th, 1930:—

First Section: *The breeding of goats.*
(*a*) The practical realisation of milk control in goat-breeding.
(*b*) Selection and maintenance of males.

Second Section: *Maintenance of goats.*
(*a*) New data on goat-feeding.
(*b*) Stables and housing.

Third Section: *Diseases of the goat.*
(*a*) New research work on tuberculosis in the goat.
(*b*) Malta fever.

Fourth Section: *Goat's milk.*
(*a*) New data on the composition of goat's milk.
(*b*) Recently-acquired knowledge on anæmia from goats milk.

Additional question: *The organisation of goat-breeding in different countries.*

The Congress will be held during the course of the National Exhibition of Antwerp and Liège.

The minimum subscription of membership is 50 Belgian francs, which should be sent to Monsieur Daniel Sioen (Médecin—Vétérinaire, Zootechnical Adviser, Boerenbind), General Secretary, 64, Geldenaakache Vest., Louvain, Belgium.

Some Parasites of Domestic Animals in Malaya.

By G. B. Purvis, f.r.c.v.s.
Federated Malay States.

The following is a list of parasites which I have examined from animals in Malaya. The host, situation in the host, and the locality are also given. Originality is not claimed, as some of them appear to have been recorded before[1]. It is hoped to publish further accounts when suitable literature has been obtained, thus enabling the writer to clear up the identity of certain already obtained species not mentioned in the present article. The majority of the parasites given in this report are nematodes, but a few are blood protozoa and acarina. It is hoped that other groups will receive due consideration at a later date.

	Host	Parasite	Site in Host	Locality
Protozoa ...	Cattle ...	*Piroplasma bigeminum*	Blood	Taiping and Maxwell's Hill, Perak.
		Theileria mutans	,, ...	,,
	Dog ...	*Trypanosoma evansi*	,, ...	,,
	Tortoise ...	*Hæmogregarina sp.*	,, ...	Alor Star.
Nematoda...	Cattle ...	*Cooperia punctata*	Abomasum	Alor Star, Kedah.
		Bunostomum phlebotomum ...	Small intestine ...	P. Wellesley.
	Sheep ...	*Gaigeria pachyscelis*	,, ,, ...	Alor Star.
		Trichostrongylus colubriformis ...	,, ,, ...	Seremban, Negri Sembilan and Alor Star.
		Hæmonchus contortus	Small intestine and abomasum.	Alor Star and Taiping, Perak.
		Oesophagostomum columbianum...	Large intestine ...	Alor Star.
	Goat ...	,, ,,	,, ,, ...	,, ,,
		O. asperum	,, ,, ...	,, ,,
		Gaigeria pachyscelis	Small intestine ...	,, ,,
		Hæmonchus contortus	Abomasum	Taiping.
		Trichostrongylus colubriformis ...	,, ...	,,
	Pig	*Oesophagostomum dentatum* ...	Large intestine ...	Alor Star.
		Globocephalus sp.	Small intestine ...	,,
	Horse ...	*Strongylus vulgaris*	Caecum	Taiping.
		S. equinus	,, ...	,,
		S. edentatus	,, ...	,,
		Oxyuris equi	Large intestine ...	,,
		Triodontophorus brevicauda ...	,, ,, ...	,,
		Gyalocephalus capitatus... ...	,, ,, ...	,,
		Trichonema spp. (many) ...	,, ,, ...	,,
	Dog	*Dirofilaria immitis*	Heart	,,
		Ancylostoma caninum	Small intestine ...	Taiping and Dindings.
		A. braziliense	,, ,, ...	,, ,,
	Cat	*Gnathostoma spinigerum* ...	Stomach	Taiping.
		A. braziliense	Small intestine ...	,,
		Toxascaris sp., probably *leonina*	,, ,, ...	,,
	Fowl ...	*Gongylonema ingluvicola* ...	Crop	Alor Star.
		Ascaridia lineata	Small intestine ...	Taiping.
		Heterakis gallinæ	Large intestine ...	,,
		Heterakis beramporia	,, ,, ...	,,
Acarina ...	Cattle ...	*Boophilus australis*	Skin	,,
	Dog ...	*Rhipicephalus sanguineys* ...	,, ,, ...	,,
	Cat	*Notoedrus cati*	Ear and scalp ...	,,

Reference.

(1) Studies from Inst. for Med. Res., F.M.S., Vol. iii, 1908, pp. 1-38.

N.H.A. Award for Bravery.

Under their new scheme of making awards when gallantry has been displayed in rescuing horses from death, the National Horse Association of 12, Hanover Square, London, announce that their Certificate of Merit has been awarded to P.C. Charles S. Gowing, of Cirencester Police Station, who stopped a horse at full gallop in Cricklade Street, Cirencester, thus preventing a serious accident liable to cause the death of the horse, and probably that of many pedestrians who crowded the streets at the time.

The action was carried out at some considerable personal risk, P.C. Gowing being slightly injured in the right arm.

The Armour Pharmaceutical Price List for 1930 discloses several reductions in the prices of this well-known firm's products. Messrs. Armour have considerably extended the packages, particularly of the powders, and the tablets of medicinal products of animal origin are now so flexible in the sizes available for prescription, that the practitioner will have no difficulty in finding the exact dosage for his patient from the current list.

An ample index and literature guide is provided, and at the end of the book is given a complete range of stockholders of the valued Glanoid Products throughout Great Britain and the Dominions.

Clinical Report.

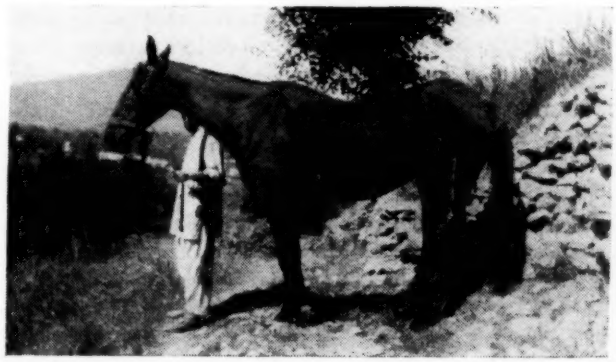
Illustrating a Typical Case of Glanders.

By J. F. L. Taylor, Capt., r.a.v.c., Montgomery, Punjab.

I enclose four photographs of a glanders case destroyed by me in September, 1929, at Abbottabad, N.W.F.P., India, under the Glanders and Farcy Act.

No. 1 shows the animal's condition; No. 2 the near eye; No. 3 the outside of the near hind leg; and No. 4 the hind legs seen from the back.

The case showed a typical clinical picture of glanders as described in the text books, and gave no relation to I.D.P. Mallein used in thue opposite eye to that shown in photograph No. 2. The Imperial Institute of Veterinary Research, Muktesar, confirmed the diagnosis microscopically in specimens sent to them from the *post-mortem* examination.



No. 1.

No. 2.

No. 3.

No. 4.

"Horse Again Coming Into its Own."

Under the above heading, the *Torquay Herald and Express* reports Mr. W. Harris, of Bideford (Vice-Chairman of the Devon branch of the National Farmers' Union), as declaring that horses were being used much more to-day than in previous years. He considered that more extensive breeding would be advantageous to the farmer. People thought the horse was going to be done away with, except for short journeys, but there was no cheaper means of transport. In London there were three times more horses now than there were three years ago.

N.V.M.A. Clinical Prize Scheme for Students.

Awards for 1929.

We have pleasure in announcing that, at the meeting of Council N.V.M.A., held on Tuesday of last week, the Council approved the following recommendations of the Assessors in connection with the Association's Clinical Prize Scheme for Students:—

"That the prizes be awarded as follows:—

"First Prize (£15) to Mr. J. Adamson, junior, Royal Veterinary College, London.

"Second Prize (£7) to Mr. F. J. Kinghorn, Glasgow Veterinary College.

"Third Prize (£3) to Mr. J. L. Buckingham, Royal Veterinary College, London."

Abstracts.

[**Transmission of Fowl-Pox by Mosquitoes.** Kligler, I. J., and Ashner, M. *British Journal Experimental Pathology*, 1929, December. Vol. X. No. 6. p. 347.]

In a previous communication, Kligler and his co-workers demonstrated the transmission of the virus of fowl-pox from diseased to healthy chickens by the agency of mosquitoes. The present paper embodies some experiments which are an extension of these findings. They confirm the original experiments and show, further, that once a mosquito is infected, it will remain infective for a period of at least 16 days. During this time, it is capable of transmitting the virus on successive occasions. Moreover, an intermediate feeding of the insect on another animal, such as the guinea-pig, failed to prevent infection of chickens at a later date. Experiments were also undertaken to determine the localisation of the virus and whether it underwent a multiplication in the mosquito. The conclusion is reached, that the virus is found in the proboscis 16 to 17 days after infection and only rarely in other parts of the body; moreover, there was no evidence of multiplication of the virus in the insect body. It was also found that the virus retained its potency on silver pins for an equal period, during which time it was possible to bring about repeated transmissions precisely as in the case of the mosquitoes.

[**The Relation Between "Grass Disease" in Horses and Botulism.** Walker, A. B. *British Journal Experimental Pathology*. 1929, December. Vol. X. No. 6. p. 352.]

These experiments were undertaken to determine whether the oral administration of sublethal doses of *B. botulinus* toxins, types A and B, could produce a chronic disease resembling sub-acute grass sickness. Eight horses received filtered cultures of the organisms and the full clinical symptoms and *post-mortem* findings are given in three of these cases. One of these horses received a large single dose of type A toxin, a second a small dose containing approximately ten M.L.D. of type B toxin and the third several sublethal doses of type B toxin. Varying proportions of one or other of the toxins were administered to the remaining five animals. All the horses died in periods ranging from 36 hours to 10 days. The conclusion is reached that equine botulism and grass sickness are fundamentally different. In the former, the author noted that the temperature was often subnormal and the pulse normal, sweating was rarely present, the tongue usually paralysed and there was no discharge from the nostrils; constipation was not marked, the fæces being normal in consistency. These symptoms are contrasted with grass sickness in which the temperature is usually raised and the pulse accelerated, the tongue is never paralysed, sweating is generally present and there is frequently a watery discharge from the nostrils, whilst the marked constipation with hard fæces is a prominent characteristic. In both diseases there is a difficulty in swallowing, but whereas in botulism this is due to labioglossal paralysis, in grass disease the probable cause is the dilatation of the stomach as a result of the paralysis of the parasympathetic system, an outstanding feature in this condition.

[**Contributions on the Investigation and Control of "Strangles" in the Horse.** (Richters (1929), *Zischr. f. Vet. Kde.* 41, 4/5, 137-169)]

(1) Artificial Infection Experiments:—

Foals may be artificially affected with strangles by

(*a*) rubbing of fresh "strangles-abscess" pus on to the nasal and pharyngeal mucous membrane;

(*b*) spraying of diluted pus on to the nasal and pharyngeal mucous membrane;

(*c*) spraying of "fine pus" on to nasal orifices from one metre distance;

(*d*) scarification of skin and application of pus;

(*e*) drinking of pus-containing water.

(2) Period of Incubation:—

Usually this is from 4-8 days, but when the animals are subjected to adverse conditions, this may be reduced to 1-2 days. In the artificial infection experiments the period varied from 5-18 days.

(3) Tenacity of the Strangles streptococcus against physical, thermal, and chemical influences.

(*a*) Strangles pus or streptococci suspended in ordinary, sterilised or filtered tap water and subjected to room (18°-20° C.), incubator (37° C.), or cold room temperature (3°-4° C.), behaved as follows:—

Ordinary Tap Water:—The number of viable organisms commences to decrease in 3 days.

Sterilised and Filtered Tap Water:—This decrease is delayed until the 5th day.

It was found that at room temperature the vitality of the streptococci was greater than at incubator or cold room temperature, 6-9, 4-5, and 3-4 days respectively.

(*b*) *Resistance of streptococci in pus or blood to desiccation and decomposition.*

1. On wood, straw, clothes, leather, and unpacked dung, 18-22 days.
2. On iron or steel, at least 28 days.
3. On skin of horses, at least 18-22 days.
4. Pus in a sealed flask, room and cold room temperatures, at least 5-6 months.
5. In packed dung, average temperature of depth, 54°-60° C., viable after 14 days; dead in 4 weeks.

(*c*) *Resistance to heat*:

In pus, blood or culture, the streptococci are killed after 1 hour's heating at 70° C.

(*d*) *Resistance to chemical disinfectants*:

2 per cent. formalin killed in 2 hours, and 5 per cent. chloramin in 3-4 hours, when streptococci dried on wood were immersed in the liquid.

Streptococci in fresh pus belong to the most resistant group of vegetative bacteria.

Chlorine and its destructive or inhibiting effect on streptococci in drinking water:

The amount of chlorine necessary to destroy streptococci (pus) in water is so high that the water is rendered undrinkable.

Protective Inoculation.

Active Immunisation: Vaccines were prepared by subjecting cultures to the action of methylene blue, brilliant green, or formalin. Of 9 foals injected subcutaneously with these (3 on each) in doses of 10·0 c.c., 15·0 c.c., and 20·0 c.c. respectively, and tested for immunity 10 days later by

the spraying of streptococci on the nasal mucous membrane, one only in each group did not succumb to strangles.

Passive Immunisation: Of 14 foals inoculated with hyperimmune serum, 12 succumbed to strangles (presumably natural infection).

Curative Inoculation.

More than 60 virulent strains were used in the hyperimmunisation of horses. This was accompanied by abscess formations and some deaths, it being found rather difficult to take an animal through its course of immunisation. No *in vivo* or *in vitro* method was found of value in attempts to titrate the serum.

The value of a curative method—the combination of a polyvalent immune serum with a polyvalent methylene-blue-vaccine—was tested on a number of foals experimentally infected with strangles. The result of this experiment (7 foals on one occasion and a larger number of older animals, up to 2 years old, on another occasion) was that the administration of serum and methylene-blue-vaccine in the early stage of the disease cut short its course. Large doses of serum (50·0 c.c.-100·0 c.c. intravenously) were given and often repeated, in combination with from 10·0 c.c.-20·0 c.c. of vaccine subcutaneously. Fever was lowered, the general condition improved and pus formation cut short or prevented. (No controls are mentioned and in two foals the administration of serum alone gave good results.)

Protective and Curative Experiments with Besredka's Antivirus.

Preparation of the Antivirus: 50-60 strains of strangles streptococci, each strain in a separate flask, grown for 10 days in serum broth. All cultures then mixed and "Seitz" filtered; then reinoculated, grown a further 10 days and refiltered. The filtrate constituted the "antivirus." It was found to have an inhibiting effect on streptococci *in vitro*, was non-toxic for laboratory animals and did not protect them against a lethal dose of culture.

Starting with the opinion that the strangles streptococcus penetrates, as a rule, from the glandular apparatus of the throat into the tissues and from there by way of the lymph vessels into the neighbouring lymph nodes, an attempt was made to produce a local immunity in sound foals, by injecting 50·0 c.c. of antivirus subcutaneously on each side of the pharnyx. A very painful diffuse œdema is produced. In two foals so treated, strangles appeared after the spraying of pus on the pharynx, and no good effect was got by the subcutaneous injection of antivirus (100·0 c.c. subcutaneously on breast and 2 days later 200·0 c.c. intravenously) on the appearance of the first clinical signs of disease. The local application of antivirus to the strangles abscess by syringing and on tampons appeared to reduce the pus flow and to promote healthy granulations.

Immunity to Strangles after Recovery.

Opinion is divided on this question, but the consensus is that a second attack can occur. In 7 recovered (3 months) cases, reinfection was set up in two by artificial means and, in one, a further infection was produced six months later.

No useful information was obtained in an attempt to demonstrate the presence or absence of immunity in normal or strangles-recovered animals by injecting streptococcal filtrate intradermally, as in the "Dick" test as applied to scarlet fever in the human subject.

Carriers of Streptococci.

Streptococci, morphologically and culturally identical to the strangles streptococcus, have been isolated from the nose of perfectly sound horses. Their presence here may be one explanation for sudden outbreaks of the disease, especially after exposure of the animals to adverse conditions.

Strangles and the Army.

In the years 1900-1911, the number of cases of strangles in the Prussian Army was 0·23 per cent., with an average death rate of 2·1 per cent. of the attacked. In 1912 and 1913, a large number of horses was bought, with an increased incidence and death rate from the disease.

In the first few months of the war no disease spread more quickly: in the first 7 months of 1914-15 it reached 9 per cent. of all diseases in the field with a mortality of 9·2 per cent. of the infected. With the introduction of separate watering pails and veterinary hospitals, the disease lost much of its terrors.

The post-war figure was 0·18 per cent. (1921-24) and 0·34 per cent. in 1925, the mortality for this period being 1·3 per cent.

Ravages of Warble Fly.

Leathersellers' Company's Preventive Work.

The Leathersellers' Company announces that, in connection with the work of its special committee which is attempting to reduce the damage caused to cattle by the warble fly, the Empire Marketing Board has made a grant of £1,000, provided an equal amount is raised through other channels. This announcement, it observes, will be welcomed by all interested in the improvement of the live-stock industry in this country, as well as by butchers, dairymen and leather producers. The Leathersellers' Company will contribute £250, and a similar sum has been promised by tanners, and there is little doubt that the full amount required will be forthcoming.

Certain Continental countries are considerably ahead of this country in their efforts to combat the ravages of the warble pest, and, as the British livestock industry holds the foremost position in the world, it will be placed at a disadvantage unless similar action in taken in this country. That the problem is easily solvable in this country by an economical and efficient method of treatment, has been demonstrated by the work of the Agricultural Committee of the Worcestershire County Council in the past two years, and, as the work of the Leathersellers' Company has the cordial support of the National Farmers' Union and of the County Councils Association, it is confidently expected that, during 1930, there will be a considerable extension in the dressing of cattle in order to kill the warble grub.

The Leathersellers' Company has a long history of activity in matters relating to the welfare of the leather industry, and, in taking the present action, they are carrying on beneficent traditions from the 15th century. All who are interested are invited to apply to the Clerk, Leathersellers' Company, St Helens-place, London, E.C.3, for information as to the work of the committee.—*The Times.*

Reviews.

The "Scottish Farmer" Album for 1930.

The above annual publication, with which is incorporated the Farming World Year Book, is now available from the Scottish Agricultural Publishing Co., Ltd., 93, Hope Street, Glasgow, C.2, at the price of 1s. 6d., or post free, 1s. 10½d. It runs into 344 pages and is a very cheap compendium of useful information for the agricultural and veterinary student, and for all those who desire to keep in touch with the practical side of both agriculture and veterinary sciences. The photographs of prizewinners in the various classes of animals are excellent guides as to type and most helpful to the student and learner. It would be difficult to find so many types of British stock, and especially Northern stock, displayed in any other publication. The photographs of prominent Lowland agriculturalists, of cattle herdsmen, shepherds and grooms who have kept the stock-raising industry of the North well to the front, form an interesting part of the album; the same may be said of the Honours List of Buttermakers.

In the portion devoted to the Farming World Year Book, which covers a matter of 111 pages, a résumé of the activities of the year is given in concise articles, which will repay careful perusal. For instance, under the heading of Legal Decisions of the Year, by "Lex," is an account of rulings in the Courts of Scotland and England on (*a*) The authority of an auctioneer to sign contract for the sale of land; (*b*) Carriage of live stock by Railway Company; (*c*) Sale of horse warranted sound; (*d*) County Council and prosecution under the Diseases of Animals Acts; (*e*) Income tax assessable to Highlands farmer for Lowland winter grazing; (*f*) Landlord and Tenant; (*g*) Landownership and grazing among crofters, liability of landowners for fencing of lands adjoining a public road; (*h*) Master and servant; (*i*) Roads; (*j*) Small Landowners (Scotland) Act; (*k*) Cattlemen and Unemployment Insurance Act, 1920; (*l*) Valuation Roll; (*m*) Workmen's Compensation Acts; (*n*) Scottish Land Court. Mr. James Lennox contributes an article on Agricultural Organisation which, he concludes, is the one sure cure for agricultural depression. Mr. Archibald MacNeilage, junior, under the title of "Use More Milk," discusses factors incidental to the "Drink More Milk" campaign. He shews the small amount of home production of butter, cheese, condensed milk and milk powder (which indicate the alternative uses of milk) over imports of these materials. There are financial risks attending the alternative uses of milk, and if farmers are not prepared to face these they must devote more attention to the increased use of liquid milk.

Cattle.—The review of the shorthorn cattle sales, herd disposals and shows of 1929, and the same in respect to Aberdeen-Angus cattle, are ably and concisely dealt with by Mr. Alexander Sutherland, Assistant Editor, *The Scottish Farmer*. At the Perth Spring Sale, many of the best bulls were sold for export, nine realising over 1,000 gns. Capt. John MacGillivray, of Calrossie,, obtained 2,800 gns. for one, 950 gns. for another and 1,600 gns. for a third, his average for 14 being £900 15s. 0d. Mrs. Fletcher, Rosehaugh, obtained 2,100 gns. and 1,100 gns. for two bulls, and Mr. W. MacGillivray, of Glastullich, 1,500 gns. for another. Lady Cathcart, of Cluny Castle, for a group of three bulls obtained an average £1,214 10s. 0d., all for export: one realising 1,800 gns. and a second 1,250 gns. The grand total of the Perth spring sale was £42,988 11s. 6d. The autumn sales were upset by the outbreak of foot-and-mouth disease in Lanarkshire early in September. The dispersal sale of the late Mr. J. J. Mowbray, Walmoor, realised £3,511 4s. 0d. for 51 head. In the autumn sales, during the Duthie Shorthorn Week, 680 gns. was given for a bull calf, an average of £107 18s. 0d. being obtained for 21 bull calves. In the Balcairn Sale, 620 gns., 350 gns., 260 gns. were respectively given for bull calves, the total of £3,747 9s. 0d. being obtained for 27 bulls and bull calves. In Shows, Mr. A. J. Marshall, Bridgebank, Stranraer, carried off the 1st Honours at the H. & A.S. Show at Alloa with his Royal Show Champion Bridgebank Vulcan, making the sixth time in eleven years that the H. & A.S. Shorthorn Championship has gone to the Bridgebank Herd.

In spite of the striking demand for Aberdeen-Angus cattle, prices seem to have declined as much as 25 per cent. in two years, the decline being consistent with a falling-off in quality, and the absence of Irish buyers in consequence of foot-and-mouth disease in Scotland. Aberdeen-Angus cattle numbering 2,410 were sold at various sales and herd dispersals, the average price realised being £34 9s. 8d. At the Perth Spring Show a nine-months-old bull, Baron Bruce, belonging to Mr. J. Ernest Kerr, of Harviestown Castle, was sold for 3,100 gns. to go to the Argentine. This is a record price for the breed in this country: Mr. Kerr's champion bull, Jarvie Eric, changed hands for the surprisingly low figure of 240 gns. The Aberdeen joint sale of cows and heifers in October was the smallest for many years. The well-known herd belonging to Mr Wm. Wilson, of Coynachie, the largest registered Aberdeen-Angus herd in Britain, was sold at Aberdeen on September 5th.

Chapters on Galloway Cattle in 1929, Dun and Belted Galloway Cattle in 1929, Ayrshire Cattle in 1929, and British Friesian Cattle in 1929 are contributed by Mr. H. N. M. Buchanan, Sub-Editor, *The Scottish Farmer*. The Galloway Breed Society has instituted a scheme for winning the supreme championship on the hoof at Smithfield, where on six out of eight occasions since 1921 the breed has secured the supreme championship in the carcase competition. At the Castle Douglas spring sale, the Irish Governments, both north and south, were prominent buyers. The highest price paid for a Galloway bull for many years was 155 gns., the purchaser being the Duke of Buccleuch. At both the R.A.S.E. and H. & A.S. shows there was quite a representative display. Enthusiasm for the Dun and Belted breeds of Galloway cattle is found more in England than in Scotland. The Ayrshire year has been marked by steady progress, the feature of the trade being the demand for pedigree, milk-recorded, and tuberculin-tested cattle for England and the Colonies; Canada, including British Columbia, being the chief countries to which they were exported. In the latter Province the cattle are all dehorned, and only dehorned Ayrshires are accepted for export to it. At the London Dairy Show last year (1928), Ayrshires made almost a clean sweep of inter-breed trophies in milking

trials. In 1929 only one trophy was retained. In the dispersal sale of Mr. R. Paton, of Mains of Airies, Ervie, Stranraer, the average price for 214 pedigree Ayrshires was £23 14s. 2d., the highest price of the year for a female being £90. The highest price for a bull during the year was 108 gns.

The success of British Friesian Cattle in 1929 appears to have eclipsed all previous years, particularly perhaps, in the improvement of butter fat yield. At the London Dairy Show the average yield for six cows was 8¼ gallons at 4·3 per cent. butter fat. One cow gave 91 lbs. milk at 5 per cent. butter fat. An eight-year-old cow, Penshirst Lofty, set up a new record at 102 lbs. milk at 3·3 per cent. butter fat. In milking contests in England, 22 of the leading 30 cows in the register issued by the Ministry of Agriculture are British Friesians. The most remarkable performance of the year was at the inter-breed milking trials at the R.A.S.E. Show at Harrogate, where Mr. E. G. Barton's British Friesian cow, Chaddesley Hedge Rose II, broke her previous record by yielding 103 lbs. of milk at 4·17 per cent. butter fat, and winning also the butter tests with a yield of 4 lbs. 5 ozs. Scotland did well in the Show Ring with a low-standing animal and with a good top line, improved vessel and teats. Lord Glentonar secured the supreme championship trophy at the H. & A. Show, Alloa, with a two-year-old heifer, which was also first at the R.A.S.E. Show. Three hundred and twenty animals sold by auction in Scotland realised an average of £26 11s. 11d. The best prices for the year in England were 500 gns. for a bull and 200 gns. for a cow.

Red Polls are more popular in England than in Scotland. The dispersal sale of Major J. A. Morrison, Basildon Park, averaged £65 17s. 1d. for 111 head sold. The year witnessed a revival in the export trade. There was a fair display at the H. & A.S. Show and a first-class display at the R.A.S.E. at Harrogate.

Owing to the success which has been achieved with the crossing of female Highland cattle with Shorthorn bulls, there has been a good demand for Highland heifers. At the annual bull sale at Oban in the spring the average price was £24 4s. 5d., while the annual sale of females in the autumn the average price was £19 6s. 6d.

Horses.—The articles on horses, as might be expected, were contributed by Mr. Archibald MacNeilage, Secretary, Clydesdale House Society, and Editor of *The Scottish Farmer*. In the article on Clydesdales in 1929, Mr. MacNeilage pays tribute to the work of five outstanding men who have passed away during the year. Mr. William Elliot, Mr. William Montgomery, Mr. James Weir, Mr. W. W. Philip, and Mr. Charles Reid. Demand for heavy, thick, well-ribbed geldings was well sustained throughout the year. At Carlisle in March, prices for geldings reached 91 gns., 84 gns., 70 gns., 66 gns., and in November the same class on farms were selling at from £60 to £80 and even up to £95. At St. Sair's Market in July, when 350 horses were submitted for sale, £60 to £75 were common prices for matured horses; three-year-olds made from £40 to £55; two-year-olds £30 to £40; and yearlings from £18 to £30. At Stirling, in the autumn, two-year-olds in the prize list sold at £69, £64, and £54, three-year-olds at £58, £38, and £46, and aged horses at £62 to £73. At Lanark prices were on an average £4 better than in 1928. The L.M.S. Railway is a considerable buyer, the company being reputed to have 8,859 horses for road work and 252 for shunting work, on their books. Under the Horse Breeding Act, 1918, 370 Clydesdale stallions were licensed to travel to Scotland and 127 in England and Wales during the year 1929, an increase of 15 in England and Wales over the previous year. Export trade in Clydesdale pedigree horses has been on a diminishing scale since pre-war days, but a strong interest is still maintained in Australia, where the breed is held in high esteem. Mr. MacNeilage quotes some eloquent figures from Ontario, Canada, to show the preference for less hairy-legged horses in that province and the threat to Clydesdale supremacy. In 1913 there were enrolled in the Province 1,179 Clydesdales, 236 Percherons, and 69 Shires. In 1929 corresponding enrolment amounted to 524 Clydesdales, 424 Percherons, 4 Shires, 70 Belgian draught and 4 Suffolk. In the showyard the produce of the top-sawyer Clydesdale stallions Benefactor, Dunure Footprint, Craigie McQuaid, and Brunstane Again, achieved remarkable successes. The produce of the first-named won 11 championships, 27 first prizes, 20 second prizes and 9 third prizes, the number of animals shown being 34. The produce of Dunure Footprint is credited with 2 championships, 4 firsts, 2 seconds, and 7 thirds out of 18 shown. Craigie McQuaid's stock wins 1 championship, 3 firsts, 3 seconds and 4 thirds with 8 animals shown, while Brunstane Again scores 2 championships, 5 firsts, 3 seconds and 3 thirds with 10 animals shown. Space will not admit of the mention of many names, but note is made of Craigie Ambition, by the wonderfully goood quality sire, Bonnie Buchlyvie, which took all three championship prizes at the Glasgow Stallion Show, and an outstanding yearling colt, Dunmore Supreme, by Woodbank Majestic, which is acclaimed as the best yearling seen in Scotland since Everlasting.

In light horse breeding the number of thoroughbred stallions licensed by the Scottish Department in 1929 was six, and during the season a number of Scots-bred hunters did fairly well at London, the Royal and the H. & A.S. Shows. The number of hackney stallions licensed in Scotland was six. Scots enthusiasts do their share towards keeping the hackney flag flying, but, as the editor expresses it, the hackney is fighting a brilliant rearward battle.

Highland and Western Isles ponies are now to come under one designation in the H. & A.S. catalogue. The number of stallions licensed by the Department in 1929 was 25, which was 10 less than 1927. Regret is expressed at the falling off in the breeding of these useful ponies, as they are well fitted for van work. At auction sales, prices have ranged from £20 to £42. There is also a decline in the breeding of Shetland ponies. The number of licences for stallions issued in 1929 was 20 as compared to 52 in 1927.

A short chapter is devoted to Shires, Suffolks and Percherons collectively. All these breeds had a reasonably satisfactory record during 1929. The Shire Jubilee Show at London was an unqualified success. Mr. Belcher's Eaton Premier King was champion for the second time and the champion mare was Mr. Lloyd's Lockinge Ridgway Rose, well-known on both sides of the border. The breed made an indifferent show at the Royal, but the selected

team made a favourable impression at the H. & A.S., Alloa. The use of shire stallions in Scotland has not been marked by any conspicuous success.

Three non-competitive exhibits of the Suffolk Punch—a stallion, a mare, and a gelding—were admired at the H. & A.S. Show, with the result that several geldings of the breed have been purchased for street work in Scotland.

The Percheron holds its own in Great Britain and, as previously remarked, is making an advance in hitherto almost unassailable Clydesdale territory overseas.

Sheep.—The decline in arable cultivation in Scotland in recent years has produced a compensatory reaction towards the increase and prosperity of sheep farming. The sheep population of Scotland in 1929 amounted to nearly 7,500,000, an increase of approximately 1,130,000 since 1920, including about 500,000 ewes and 14,000 rams for breeding purposes. In the various very interesting articles on sheep, that on Blackface Sheep is contributed by the Editor; Border Leicester, Cheviot, Half-bred and other sheep are dealt with by Mr. Alexander Sutherland, while the English sheep breeds are described by Mr. E. Walford-Lloyd. The articles conclude by a general summary of ram sales in Scotland 1928-29, giving numbers sold, the highest and average prices of each breed for each year. It is instructive to note from this summary that 12,586 rams changed hands at a cost of £150,958 10s. 0d. and 9,025 ram lambs at a total of £63,537 10s. 0d., both numbers and prices showing an increase on the previous year. The turn-over of Blackface rams (5,200) and Blackface ram lambs (3,690) of course heads the list, the highest price realised for the former being £450 and the latter £220. Border Leicester rams (4,480) and Border Leicester ram lambs (3,050) come next with the highest price at £310 and £60 respectively. Cheviot rams (1,555) and Cheviot ram lambs (88) record the highest price at £400 and £65 respectively. The demand for Border Leicester rams has been stronger than ever for mating, with the Cheviot and Blackface ewes for the production of the half-bred and Greyface, which are more suitable for lowland farms than hill grazings. The splendid well-made and economic half-bred has now become a popular and important breed of sheep in the lowlands of Scotland and in the North of England. Half-bred ewes, gimmers and ewe lambs have seldom been in greater demand than in 1929, but the demand for half-bred rams has dwindled down. The popular crosses on half-bred ewes are Oxford Down and Suffolk rams. In the ram sales for the year there were sold of these breeds: Oxford Down rams, 860 (highest price £57, average price £14 2s. 2d.); Oxford Down ram lambs, 1,020 (highest price £48, average price £9 16s. 11d.); Suffolk rams, 133 (highest price £33, average price £10 15s. 0d.); Suffolk ram lambs 1,050 (highest price £68, average price £11 0s. 1d.).

Space will not admit of further remarks; for further information the purchase of the Album is strongly recommended.

J. M.

[**Poultry Diseases.** By B. F. Kaupp. Fifth edition. London: Ballière, Tindall and Cox. 1929. pp. 436, 164 plates, 16s.]

No book worthy of the subject of poultry diseases has yet been published in the English language. This book is probably the best at present available, and as such can be recommended to our readers.

The work is profusely illustrated, but many of the plates are of doubtful value. One would have preferred an illustration showing how to obtain a blood sample from a bird to a plate depicting a "cysto-lipo-chondro-osteo-adeno-carcinomata of a golden Wyandotte cock."

Perhaps the most serious fault we find in this book is the author's advocacy of certain internal disinfectants. We hope that when British veterinarians encounter "contagious bowel diseases of fowls" they will not be party to the internal administration of corrosive sublimate.

J. P. R.

[**"Agricultural Research in 1928."** Royal Agricultural Society of England. 193 pages. Price 1s. 3d. Post free.]

The fourth volume of this annual summary of the scientific and economic research work in agriculture, not only at home but abroad, in so far as colonial and foreign results are of interest to agriculturists in this country, has now been issued. Started four years ago at the instance of the Research Committee of the Royal Agricultural Society, quite frankly as an experiment, the publication has now established for itself a definite place in the periodical literature of the farming industry. Farmers are naturally at a disadvantage, not only in interpreting the results of scientific work but also in knowing where to look for them. They appear in a great variety of forms, in periodicals not always accessible to the farmer and couched in language not always easily understood by him. His work lies around him on his farm; he has neither the time nor always, in these days, the means to study a multiplicity of journals and pamphlets, and thus it happens that the results of research work are often too slow in reaching those who are most concerned to know about them. Collected from all available sources, put together by acknowledged authorities, in non-scientific language, the contents of *Agricultural Research* should be studied by all those who wish to keep themselves abreast of the times in modern agricultural practice.

It is impossible to do more than to give some indication of the subjects dealt with in the new issue. Arable farmers will be interested in the article on Sugar Beet which forms the opening section of Mr. Engledow's review of "Crops and Plant-breeding," whilst the portion in which he deals with the importance of securing a full and even "plant" in cereals is of particular value at the present time when the difficulty of getting an adequate financial return from corn crops is so real. Mr. Mackintosh has some useful observations on dairy farm management, and the economics of the production of clean milk, and the establishment of a tubercle-free dairy herd. The question of taints and flavours in milk is also dealt with by him. Under the heading of "Agricultural Economics," Mr. Orwin deals with factors in the cost of various farm products, and there is an exposition of the new credit scheme which should be useful at the present juncture. This section also contains a brief but useful summary of the economic position and the trend of events in the agricultural industry at the present time. In these days of

high labour costs and low prices, the farmer is turning more and more to the use of machinery in the hope of increasing the output of labour, and the information contained in Dr. Owen's contribution on "Agricultural Engineering," dealing, as it does, not only with the efficiency of old and well-tried implements, but also with new inventions such as those for rotary cultivation, the combine harvester-thresher, and the potato harvester, will receive close attention. Information is also provided on the important problem of lifting the sugar-beet crop. Dr. Crowther, as would be expected, has much to say on recent work in "Animal Nutrition," and the recent development of knowledge on the nutritive value of grass at different stages of its growth will be found of particular interest. "Soils and Fertilisers" form the subject of a valuable review by Sir John Russell, and his summary of research work on the manuring of the sugar-beet crop deserves careful attention. A section on green manure and the limitations of its usefulness under varying soil conditions is of great practical value. The volume concludes with Sir John McFadyean's summary of the progress of "Veterinary Research" during the year, particular attention being given to the control of tuberculosis and that other scourge of the dairy farmer, contagious abortion. Mastitis, foot-and-mouth disease, Johne's disease, liver rot in sheep, lamb dysentery and contagious pustular stomatitis in sheep are also dealt with.

For the assistance of students and others desirous of consulting original sources of information, each section of *Agricultural Research* concludes with a complete bibliography of papers quoted. The Royal Agricultural Society, it should also be noted, is continuing the sale of the volume at the reduced price of 1s. 3d. post free, in order to secure the widest possible circulation. To members of the Society it will be sent free on application.

Danger of Lead Poisoned Land.

Under the above heading *The Bristol Evening World* Agricultural correspondent states, in the course of a recent message to that paper:—

"Lead poisoning was found to be the cause of a number of mysterious deaths to poultry belonging to a South Wales farmer. The birds had the run of a farm where there was once an old lead mine and had access to the rubbish tips from the mine. The danger that exists to poultry or cattle in the vicinity of a lead mine is well realised. It makes little difference if mines are being worked or whether they have remained derelict for several centuries—the surrounding land is poisoned just the same. Poisoning would result in one case through the direct action of the lead or lead fumes and in another the sun and rain oxidises the refuse and forms a soluble form of lead capable of contaminating the land.

"The Mendips are full of lead, which has been worked from the early days of the Phœnicians up to fairly recent years, and the people there know the danger of the lead-poisoned ground, which is locally termed mindered ground. Large tracts of land on Mendips top are out of bounds for pasture and woe betide the unlucky farmer who breaks bounds.

"Lead poisoning used to be fairly common among country people. It was caused through drinking cider that had flowed through the lead taps attached to the barrel."

From The Veterinarian,

November, 1829.

Soundness in Horses.

By Mr. W. Percivall.

(Read at the Veterinary Medical Society, October 21st, 1829.)

(*Continued from page* 39.)

In respect to what are denominated

The Habits and Vices of Horses,

In a general way, they are said (and perhaps with reason) not to amount to unsoundness. Here the law bears us out pretty well; it informs us: "Where the defect is merely an inconvenient or disagreeable trick or habit and not proceeding from any organic disease or infirmity, which may tend to a growing incapacity to perform the services required from a perfect animal, the horse shall not be held unsound." At the same time, this rule must be taken with some reserve; it is one to which we may with advantage apply the standard by which we have been estimating the other and less ambiguous cases of soundness and unsoundness.

Crib-biting, for example, the worst of these "habits," I should say, certainly ought to be ranked among the causes of unsoundness, whenever it was known to give rise to frequent cholic, or so affect digestion that the animal could not be got into condition in consequence of it. So, likewise, would I regard wind-sucking and quidding. The law on this point stands thus: "Where it (crib-biting) exists in any great degree, it will properly constitute unsoundness; but where the habit is only in an incipient state, it has been held not so."

"Vices," as are called shying, starting, tripping, biting, kicking, restiveness, etc., do not, any of them, come into the catalogue of unsoundnesses; a certificate of warrantry, stating that the horse is "sound," has no reference to these tricks or evil propensities; to be insured exempt from the latter, the clause "and free from vice" must be added.

I have but a few words to add on the subject of

Blemishes,

and then I will conclude a paper which, I fear, has already occupied an unwarrantable share of the Society's time and attention.

Dr. Johnson synonymises a blemish to be "a mark of deformity; a scar; a diminution of beauty." Conformably to the subject before us, I would define it to consist in an alteration of the natural external appearance of a part; it has nothing to do either with altered structure or function; although it may exist (and very frequently does) concomitant with both. It does not amount to unsoundness.

A blemish of the most common occurrence and serious concernment is (what is called) "broken knees"; concernment, not to the horse, but to his owner, from the imputation which custom or prejudice has, with no more truth than falsehood, attached to the animal, of being a stumbler. However large the scars may be, as simple blemishes, they do not warrant the denunciation of "unsoundness."

Neither do scars upon the back or shoulders, or withers, on any other part of the body; unless there exist open wounds or tumours in an active stage of disease.

Such, Gentlemen, forms the amount of my crude thoughts on the subject of "soundness"; I hope to have them freely purged and greatly amended by your united discussions.

Administrative Report.

Northern Rhodesia Veterinary Department.

The report indicates that much good work has been accomplished in the face of many difficulties. The staff consists of 8 veterinary officers assisted by 14 stock inspectors and one clerk. This staff is quite inadequate to cope with all the work which should be undertaken, and an increase has been found impossible at present owing to financial conditions. The desirability of obtaining more clerical assistance is emphasised, particularly for relieving technical officers of the work of collecting and correlating statistical records.

The principal object of the Veterinary Department is the prevention and detection of contagious diseases of animals. The routine work consists in periodic inspections, examination of animals detained for removal for slaughter, prophylactic inoculations, testing dipping fluids, control of outbreaks of disease and advice on animal husbandry.

Research Work. During the year it has been found impossible to carry on research work to any degree, owing to delay in building the Laboratory at the Central Research Station. This building is now nearing completion, and experiments in animal nutrition and genetics have been planned. Work will shortly commence with adequate equipment, and an increase of research staff is anticipated.

The Report complains of apathy on the part of European stock owners towards the principles of animal husbandry, and this apathy is shared by the native stock owners, who also follow a policy of concealment of disease. A marked deterioration is shown in the quality of native-owned cattle during the past 15 years, and this decline is due chiefly to inbreeding, breeding from immature stock and poor conditions of feeding, housing and supervision.

Owing to the increasing demand for meat and dairy produce caused by the mining development in Northern Rhodesia, careful re-organisation of the methods employed by the cattle industry is essential if this demand is to be met by stock owners in the Territory. The quality of meat at present produced is below the standard desired by the mining districts.

Grading up of stock will necessitate systematic grazing over limited areas to improve the carrying capacity of the pastures, and the provision of fencing is called for. The cultivation of forage crops is essential to supplement the grazing, which is very deficient in the long dry season.

The number of European-owned stock in Northern Rhodesia is given as 91,888 cattle, 4,144 sheep, 4,063 pigs and 530 equines. The estimated number of native-owned cattle is 348,553.

Diseases. Northern Rhodesia is more favourably placed as regards animal diseases than other territories of the East African group.

Bovine pleuro-pneumonia is confined to the Barotseland Native Protectorate by the activities of a Police cordon, whilst African coast fever, rinderpest, and foot-and-mouth disease are unknown.

Anthrax. Prophylactic vaccination is practised against anthrax in districts where the disease is known to occur, and the lower incidence of this disease in European-owned herds is ascribed to this treatment.

Tuberculosis has been recorded in the Fort Jameson District only during the period under review. It was probably introduced many years ago with imported cattle. The remainder of the Territory appears to be very free from this disease. Imported animals are now tested in quarantine unless they have passed the tuberculin test within three weeks prior to importation.

Piroplasmosis and anaplasmosis are endemic, and the mortality among indigenous cattle is very low. The immunity of these cattle is, however, lowered in their progeny by improved imported animals, and it is necessary, therefore, to resort to frequent dipping to eradicate ticks.

Trypanosomiasis. The areas of European settlement are practically free from Tsetse fly, with the exception of Fort Jameson district and the mining areas north of Broken Hill. Movement of cattle from dangerous areas is prohibited. Regular intravenous injections of antimony tartrate solution have given good results and have proved of great value in the Fort Jameson and northern mining district.

Veterinary Students in North America.

The total number of veterinary students attending the 13 veterinary colleges in North America, according to figures compiled by Dean O. V. Brumley of the Ohio State University, is 1,089 for the school year 1929-30. Five years ago, 1924-5, the number was 592. The increase has been continuous during the past five years.

The numbers of veterinary students in attendance at the various colleges at this time, are:

Alabama Polytechnic Institute	34
Colorado Agricultural College	98
Georgia State College of Agriculture	40
Iowa State College	189
Kansas State Agricultural College	118
Michigan State College	42
University of Montreal	12
New York State Veterinary College	137
Ohio State University	126
Ontario Veterinary College	81
University of Pennsylvania	107
Texas Agricultural and Mechanical College ...	20
State College of Washington	85

Veterinary Medicine, Chicago.

Hæmorrhagic Septicæmia, Serum Prophylaxis in Malaya.

The value of European veterinary methods in Malaya was well demonstrated by results achieved during a local outbreak of hæmorrhagic septicæmia among buffaloes in 1928. In the case of one herd, where serum prophylaxis was refused by the owner, there were 23 cases, all fatal, out of a total of 33 buffaloes. In another herd, by way of sharp contrast, there were 18 cases with one recovery; and, out of 166 contact buffaloes which were inoculated with specific anti-serum, only two contracted infection.

Divisional Reports.

Dumfries and Galloway Division, N.V.M.A.

Consideration of the West of Scotland Scheme for the Eradication of Bovine Tuberculosis.

A Meeting of the above Division was held in the Station Hotel, Dumfries, on November 12th, 1929, the President, Captain Simpson, being in the chair.

The following members were present:—Messrs. A. Young, G. A. Sangster, J. Lindsay, J. Waddell, G. D. W. Davidson, A. J. Milligan, W. Mackenzie, A. J. Kennedy, M. MacAlister, R. C. Robinson, J. Bell and F. A. Davidson (Honorary Secretary). Visitor: Dr. A. W. Whitehouse.

Minutes of the previous meeting were taken as read, as published in the *Veterinary Record*.

Election of Office Bearers.

President: Mr. Young was unanimously elected, on the proposition of Mr. Craig Robinson, seconded by Mr. Lindsay.

Vice-President: Captain R. Simpson was elected, on the proposal of Mr. Bell, seconded by Mr. Lindsay.

Secretary and Treasurer: Mr. Davidson was re-elected.

Motion by the Secretary to alter Rules 7 and 8 to allow of three meetings per annum being held: Mr. Davidson said that he only wished this to be put through if the members decided to make the social meeting an annual one, as, if it was to be a success, practically no business should be done at that meeting out of consideration for the ladies and whoever was asked to address the meeting. It was unanimously agreed that a social meeting be held and the meetings be increased to three per annum, one meeting to be held in February, the general meeting in November and the social meeting some time during the summer, towards the end of June or the beginning of July.

Representatives to the Council of the N.V.M.A.: Correspondence was read from the Secretary of the N.V.M.A. with reference to a motion to increase the number of representatives to the Council by the election of 25 additional members by ballot. On the proposal of Mr. Young, seconded by Mr. Sangster, this was agreed to.

Memorandum on Sheep Scab: It was considered that this matter was more a question for Local Authorities, but that the Division should support the Society in their action and suggest that more might be done in the way of visiting flocks being dipped and the sampling of the actual solutions of dip in the bath, as it was thought that this would considerably improve the standard of the dipping throughout the country.

Appointment of Director to the Animal Diseases Research Association: The Secretary intimated that they had all had circulars with reference to this appointment, but perhaps they might consider the question as a Division. It was agreed to send the following resolution to the seven local Directors:—

"That the Division deprecates the proposal to appoint to the post of Director of Research a member of a profession outside the Veterinary Profession."

Delegates to the International Congress: It was decided that, as the Division would be well represented at the International Congress at London next August, it was not necessary to appoint delegates.

Election of Members: The nominations of Messrs. Ritchie, Wilson and Kennedy were unanimously approved.

Next Meeting: It was agreed to hold the next meeting at Carlisle on a Thursday, to suit the Cumberland members, and that a surgical demonstration should be arranged for.

Motions:

(1) *Meetings of the Council of the N.V.M.A.*: After some discussion it was unanimously agreed, on the proposal of Mr. Young, seconded by Mr. Bell, that the following resolution should be sent to the Council of the National—"That one or more meetings of the Council of the National Veterinary Medical Association should be held annually in the North of England or Scotland."

(2) *Reporting of the Divisional Meetings*: It was agreed on the proposal of Mr. MacAlister, seconded by Mr. Robinson, that a reporter be employed.

Scheme for the Eradication of Bovine Tuberculosis.

Lunch at the Station Hotel was followed immediately by the Discussion on the "Scheme for the Eradication of Bovine Tuberculosis," as put forward by the West of Scotland Division, and the following, along with extracts from the discussion, was the Scheme as amended by this Division:—

General.

(1) We affirm our belief in the practical reliability of the tuberculin test when applied and interpreted by veterinary surgeons. It is on the use of this test that the whole scheme is based.

(2) For the sake of uniformity it is essential that the Ministry of Agriculture and Fisheries (M. of A. & F.) issue from time to time explicit and detailed instructions as to technique and interpretation of the tuberculin test.

(3) It is essential that tuberculin used under the scheme be supplied, or at least certified as to quality, by the M. of A. & F.

(4) The possession of tuberculin by laymen should be prohibited.

(5) The suggested preliminary work of eradication should be done by the local practitioner. The crucial tests, following on which a herd is to certified tuberculosis-free, should be done by an approved representative of the M. of A. and F.

(6) The Division recommend that this paragraph should be deleted, as control must rest with the authority, or authorities, bearing the expense.

The Tuberculosis Order.

This should be maintained and its scope possibly extended.

The Scheme.

(1) *Object.*—To eradicate tuberculosis from all the cattle in Britain, both beef and dairy stock. While the scheme will improve the quality of both the meat and the milk supply, it is essentially a fight against a single disease.

(2) *Control.*—Being a fight against a single disease of stock, its control must rest with the M. of A. & F.

(3) *Outline.*—The attack is not to be general, but particular, *i.e.*, directed against the disease in specified herds and in definite circumscribed areas. An annual appropriation is asked for, which may be large or small, and no work is to be undertaken which cannot be paid for out of the sum provided.

The scheme is divided into three parts, which may be

called—A, Accredited Herds; B, Areas by Application; C, Compulsory Areas. It is contemplated that on the adoption of the scheme the work will begin with A; B will follow after the lapse of a certain time, while C will be used for the final clearing up of areas not otherwise attended to.

(4) *Features common to all three parts.*—The herd or area is to be cleared of tuberculosis by the application of the tuberculin test and the removal of reactors under such conditions and with such disinfection of premises as may be prescribed by the M. of A. & F. All the cost of testing and disinfection is to be borne by the M. of A. & F. When circumstances permit, reactors are to be valued and slaughtered, equitable compensation being paid to the owner. In cases where it is impracticable to replace the condemned cattle, these must be indelibly marked and may then be retained under the Bang system. Subsequent slaughter with compensation may be at the request of the owner or at the Order of the M. of A. & F. Where the necessary separate buildings are not available the M. of A. & F. will provide assistance. Up to this point the veterinary work is to be done by the practitioner selected by the owner, under the orders and at the expense of the M. of A. & F. The M. of A. & F. may reject a practitioner for incompetence, negligence, etc. When the practitioner reports that the regulations laid down by the M. of A. & F. have been complied with, and that tuberculosis is eradicated from a herd, the M. of A. & F. conduct, by their approved representative, a crucial or determining test. If this is negative, the responsibility of maintaining the herd tuberculosis-free is again given to the practitioner on prescribed conditions and under supervision. Conditions are also to be laid down by the M. of A. & F. as to the admission of outside stock into a herd or area to which the regulations apply, and these conditions, except from a tuberculosis-free herd or area, should be very stringent for breeding cattle. As regards store cattle, probably a single negative test would be sufficient, if properly segregated from the tuberculosis-free cattle.

A.—*Accredited Herds.*—An Accredited Herd is a tuberculosis-free herd which has been certified as such by the M. of A. & F. An owner makes voluntary application for assistance in clearing his herd from tuberculosis and agrees to accept the conditions laid down in (4). The M. of A. & F. keeps a list of applications and makes selection partly by priority and partly by consideration of local conditions. The question of the accreditation of herds at present licensed for the production of Certified or Grade A (T.T.) Milk is a matter for negotiation between the M. of A. & F. and the Ministry or Department of Health with a view to mutual recognition of each other's Certificates.

B.—*Areas by Application.*—In the first instance 75 per cent. of the cattle in a given area must be in herds which are accredited or in process of accreditation. The owners of these herds may then make application to have eradication compulsorily imposed on the whole area. This application must be made to the local authority, whose approval is necessary before the proposal is presented to the M. of A. & F. The M. of A. & F. gives preference to areas having geographical advantages. The local authority should bear a proportion of the expense of eradication.

C.—The ultimate object of the scheme is that when the areas by application become sufficiently extensive it will be necessary to join them by some form of compulsion.

(5) *Maintenance.*—Herds and areas from which tuberculosis has been eradicated must be kept tuberculosis-free. The M. of A. & F., as stated above, must direct the procedure. The funds for eradication must not be used for maintenance, or eventually they would all be devoted to this service and eradication would stop. Separate funds must be provided, and it is a matter for consideration whether they should be provided by the M. of A. & F., by local authorities, or by the owner, or by some combination of the three.

Discussion.

Captain Simpson introduced Dr. Whitehouse and asked him to explain the scheme. Dr. Whitehouse was one of its sponsors and had very kindly come down that afternoon to explain the views which had led up to the formation of the scheme as circulated previously to the members of the Division.

Dr. Whitehouse: I thank you for inviting me here to-day and I really think it would be better if I just briefly outline some of the points and let you ask me questions as each particular one comes up, as I am hoping that some of you have already read it through. As regards the six paragraphs under "General," I need not go into details, but paragraph 2 was inserted so that the scheme would keep abreast of the most up-to-date knowledge of tuberculin testing and not confine us to one particular test. There is not very much of this scheme that is absolutely essential, and I think it will require a good deal of modification; also, those who supply the money must have a big say in its formation. One essential is that the cost of eradication should not be borne by the owner, and another is that no work should be undertaken for which there is not sufficient money already in sight. These two points I consider make the scheme feasible, as it is not held up by the prospect of enormous cost. Nearly all the work should be done by the private practitioner, as it is impossible to attempt it on a big scale without being flooded with officials. The first step would be to ask for a certain sum per annum; this would be followed by seeking for voluntary applications from owners of herds to have them cleaned up. In U.S.A., I may say they are ten years behind with the applications and each year they pick out the most appropriate herds that can be done for the sum allocated, and I think it would be better to have a small sum to begin with so that, with the experience of two or three years on a small scale, a scheme could be satisfactorily drawn up and a large appropriation then asked for. The next step is an attack on an area where a fair number, probably 75 per cent., of the herds are already clear by voluntary eradication and so on until by combining areas into one big area the country would ultimately be cleared.

I shall say no more for the present, but await the questions.

Captain Simpson: There are two ways to tackle the discussion, *i.e.*, either by taking the scheme as a whole or each of the paragraphs one by one and approving or amending.

It was decided to take each paragraph separately.

General.

Paragraph 1.

Mr. MacAlister: As we do not have a test that we can go and apply to an animal and definitely say that that animal is free from tuberculosis, I cannot see that the scheme is feasible. The subcutaneous test has failed and the intradermal is too difficult to interpret, while there are animals condemned by the latter which are free from tuberculosis. Therefore, until we can definitely say that an animal is a reactor or a non-reactor, the scheme cannot proceed.

Mr. Lindsay: We are very much obliged to Dr. Whitehouse for coming here to-day to express his opinions. We are asked to affirm our belief in the reliability of the tuberculin test, but I am not satisfied with its reliability and I agree with Mr. MacAlister, as I have been let down

more than once and very recently in the case of a valuable animal shipped to America, which, though it reacted after leaving this country, showed no signs of tuberculosis on *post-mortem* at the other end.

Mr. Young: We must realise that everything in science is progressive and though in the intradermal test at present we have not got 100 per cent. reliability, it is as near perfection as any means we know at the present time, and for the purposes of this scheme the reliability of the test is quite practical. I think the veterinary profession has every confidence in the test and there is no doubt that as time goes on we can get nearer perfection.

Mr. Sangster: I would like to support Mr. Young, as I have tested a few hundred cattle intradermally, which have been slaughtered afterwards, and I have never found the test wrong. Certainly there will be mistakes, but in everything there are mistakes and I think the test is quite reliable and that this is recognised by the whole profession.

Mr. Robinson: I agree with Mr. Young and Mr. Sangster. There is nothing perfect in this world and I think that the tuberculin test, when carried out carefully, especially as regards technique, is as near perfection as we can get in the meantime. Often when mistakes have been made I think it might not have been so much the test as the fault of the " tester " and his technique.

Mr. Waddell: I agree with Mr. Young, but I would like to recommend the caudal fold in preference to the site of the neck, as I have done quite a number this way recently and am very well satisfied with the results, even in an animal in the advanced stages of the disease.

Mr. Davidson: The tuberculin tests, though not invariably correct, are reliable enough for all practical purposes and many mistakes have been due to outside factors, some of them possibly outside the control of the operator. I asked Mr. Lindsay before the meeting if the glands of his valuable animal had been examined biologically and he said "No "; therefore, no reliance can be placed on the decision that there was no tuberculosis, especially as the animal passed on this side a short time previously. As far as this scheme is concerned I consider that the tests, not holding one particular test above another, are quite sufficient and will be more so in the future. I have used the intradermal since 1921 and have practised it both on the neck and the caudal fold, but every year my knowledge has been increased and the best improvement I have used recently is the control of doubtful reactors by broth inoculations. The trouble with the intradermal test is that it has been rushed on to the market with insufficient education, but nothing about the test need hold up the scheme.

Mr. MacAlister: As I started this objection I withdraw, because all the speakers have collaborated my statement that the test is not 100 per cent. reliable.

Paragraphs 1, 2, 3 and 4 were then approved.

It was explained that paragraphs 5 and 6 had been deleted by the Committee of the Scottish Society of Veterinary Inspectors as it was felt that, as the Ministry of Agriculture and Fisheries were being asked to finance the scheme, details should not be laid down, but left to them.

Mr. Sangster: I would like to support the part in paragraph 5 which says that the preliminary work should be done by the practitioner.

Mr. Davidson: I raise no question as to who is to do the work; in fact, I am quite agreeable to the paragraphs as they stand, but I do not think we should dictate too much.

Mr. Young: The Ministry ask for suggestions and we should give them all that we can.

Dr. Whitehouse: We wanted to get a scheme that would carry the whole profession and also see that the practitioner would get a good deal of the work. Nothing is said about the Local Authority in paragraph 5, but they are not asked to meet any expense of eradication and are merely mentioned in the work of maintenance.

Paragraph 5 was then amended as shown, and paragraph 6 deleted.

Mr. Davidson recommended that the word " approved " be inserted before " representative," so that the Ministry could send either one of their own officers or appoint a local man, either practitioner or County Veterinary Inspector, to perform the crucial test.

There was then considerable discussion as to the Local Authority bearing part of the expense. Dr. Whitehouse pointed out that they were brought in under the scheme for maintenance and also when they made application for an area to be cleared, and no doubt there would have to be a certain amount of control exercised by the County Veterinary Inspector.

There was also discussion on the question of the Tuberculosis Order, but Dr. Whitehouse pointed out it was not essentially a part of the scheme and, therefore, there was no real need to discuss it. The recommendation to maintain and extend its scope was approved.

Dr. Whitehouse: We shall now turn to the scheme proper and, though this is essentially aiming at eradication in two classes of cattle, *i.e.*, beef and dairy stock, we do not want it to become a Public Health question at all and we do not consider premises except as necessary to avoid tuberculosis. We have left it open whether it is necessary to consider pigs and poultry; later experience probably would be gained as to whether we must include these.

Mr. Robinson: I would leave out pigs and poultry in the meantime; later the position may be reconsidered.

Dr. Whitehouse: In some States in America they include pigs and poultry where the pigs follow the cattle.

Mr. Davidson: Where bovine tuberculosis has decreased the position in pigs has corresponded, but the position as regards poultry has a closer relation to pigs than cattle.

It was decided to leave out pigs and poultry.

" *Formation of Accredited Herds and Areas.*"

Mr. Young: As far as I see, you first concentrate on accredited herds until you have made some headway and then pass on to areas.

Mr. Davidson: If you mention areas at the present moment, by application or compulsion, I consider you will hold up to a certain extent the accredited herds, as some farmers will see far enough ahead that, if their neighbours proceed, they will ultimately be compelled to follow and they will use influence to hold it up. By the time you get 50 per cent. of the herds in an area clear, public opinion will be behind you and your areas will automatically follow.

Mr. Young: I think there is an area in the County of Ayr that is practically formed under the voluntary system of Certified and Grade A. (T.T.) Herds.

Mr. Davidson: The Counties of Ayr and Lanark can be taken by themselves as regards Scotland, as the others are not so well situated to get whole areas composed practically of higher grade dairying herds.

Mr. MacAlister: I cannot see that the scheme is feasible, as even if you get a certain percentage of herds free in an area you cannot force it on the others. You are going to penalise at the present time the farmer who is trying to clear his herd gradually, and the rest are doing nothing at all.

Dr. Whitehouse: You begin with application for herd eradication and merely proceed to areas when you have a sufficient number to justify it, probably 75 per cent. Those men who are already clear and are in the process of eradication will be included if thought suitable.

Mr. Lindsay: I think, Dr. Whitehouse, that there will be abuse, when they discover that they are getting their herds cleared and receiving 2d. or 3d. per gallon more for their milk.

Mr. Davidson: I do not think you need consider the price of milk, as, if the scheme ever gets properly working, and a large number of herds are cleared, the price of Grade A (T.T.) milk will probably drop to that of ordinary.

"Accredited Herds " was approved and the question of the formation of areas left until later.

The discussion of Section 4 of the Scheme, " Features common to all three parts," was then proceeded with by considering separate parts.

(1) " *Disposal of reactors.*"

Mr. Robinson: The disposal of reactors outside the

herd or area is very open to abuse and in any case what is the use of passing them on?

Dr. Whitehouse: The idea of this was to save some of the high-bred breeding stock.

Mr. Davidson: Valuable for breeding purposes, and an owner can still work away on the Bang system without allowing the question of £50 to come up, as the animal is worth that to breed from; but if that is the only reactor in the herd it should be slaughtered. The Bang system would come into operation purely as an economic question, *i.e.*, either it is more profitable to adopt a policy of slaughter or one of isolation.

Mr. Young: In certain countries I believe they have a central hospital where these animals are isolated for breeding purposes, *i.e.*, definite Tuberculosis Farms, and I think provision should be made for saving the valuable breeding cows.

The text of the scheme was altered accordingly.

(2) *"Cost of Eradication."*

Mr. MacAlister: I think we must consider how the cost of all this is going to be borne. I do not think the tax payer should pay it all. I think the Local Authority should pay something and the owner should not get off "Scot free," as herds will be tested free of charge which have not the least chance of being cleared in a reasonable space of time.

Mr. Young: It is part of the scheme that they have to be subject to the regulations.

Dr. Whitehouse: They have only got so much money to go on with, and would select the most appropriate herds and areas, and when that is finished ask for more. Further, it is essential to the scheme that no part of the cost of eradication from the herds should be borne by the owner.

Mr. MacAlister: I think that is the weak part, because there are plenty of people in a very sound financial position who will take advantage of it and, in any case, what has the farmer got to say to all this?

Mr. Lindsay: If the thing is to be done free and one man applies to have his herd cleaned up and this is done, and his next door neighbour is refused, it will lead to trouble and the solitary farmers, in any case, will have to be ringed round or they will soon be back to where they started.

Mr. Young: That is where the discrimination of the Ministry comes in. If applications are received from, say, three or four adjoining farms in a district and several isolated ones, the Ministry will proceed with the farms which march on each other.

Mr. Kennedy: I think if the Ministry start to clear up some herds free of cost and refuse others there will be a lot of grumbling.

(3) *"The Provision of Buildings."*

Mr. MacAlister: I do not agree that the Ministry should bear the cost here entirely. I think the Local Authority and the owner will have to do a little.

Mr. Young: I do not think you can expect the owner to bear any expense. It is a national question and the man in the town is as much entitled to pay for it as the man in the country.

Dr. Whitehouse: There is no question of the Local Authority bearing part of the expense as long as you have a definite appropriation annually, and if the Local Authority have no say in the control and the choice of herds I do not think they should be called on to meet it. Later on the owner and the Local Authority may have something to pay.

Mr. Davidson: I do not think that the details, as mentioned in the scheme, with regard to the provision of buildings, are necessary, and it will be sufficient to say that the Ministry will provide assistance where the necessary separate buildings and means of isolation are not available. This covers everything. If owners or Local Authorities are to be called on to bear expense it ceases to be a national scheme, and as the Ministry are paying they have a pretty good position in dictating to farmers what they have to do.

This part was amended.

(4) *"The Admission of outside stock into Herds or Areas."*

Mr. Sangster: I think that the last paragraph should be deleted. Certainly for isolated store cattle a single test would be sufficient, but the most difficult thing is the admission of animals into free herds, and these should come from tuberculosis-free herds and be quarantined for a month at least.

Mr. Lindsay: If a man has got a tuberculosis-free herd and is bringing stock on to his farm he will surely take every means to avoid contamination.

The last two sentences of this section were approved.

A.—*Accredited Herds.*

Mr. Young: As regards the recommendations for the selection of applicants, I think you might get a certain amount of influence from people with pedigree animals. We should make provision for dairy herds and leave out the words "pedigree and high grade," as it all depends on the area.

This paragraph was amended as shown.

B.—*Areas by Application.*

After considerable discussion as to whether it was advisable to mention areas at this stage of the scheme, though it was agreed that the ultimate object was the formation of areas, the whole of this paragraph was approved.

C.—*Compulsory Areas.*

It was thought that the question of compulsory areas could be much more satisfactorily dealt with if, and when, the accredited herds and areas by application were put into force, and it would be sufficient merely to refer to this part as being the ultimate object of any scheme.

(5) *Maintenance.*

The general parts of this paragraph were agreed to.

The President, in moving a vote of thanks to Dr. Whitehouse, said that they had had a very good discussion, and this was chiefly due to the fact that Dr. Whitehouse had so willingly consented to come and explain the whole scheme. Dr. Whitehouse was accorded a very hearty vote of thanks by the whole meeting.

F. A. Davidson, *Hon. Secretary.*

Scottish Metropolitan Division, N.V.M.A.*

Address by Mr. W. Nairn on "Research and the Practitioner."

A meeting of the Scottish Metropolitan Division, N.V.M.A., was held in the Royal (Dick) Veterinary College on March 13th, 1929. Professor R. G. Linton, the President, occupied the Chair.

Consideration of the Minutes was deferred until the next meeting.

Apologies for absence were intimated from Major A. Baird, Messrs. R. H. Connochie, H. Begg and E. J. Duncan.

Obituary.—The President intimated the sudden death of one of the younger members of the Division which had occurred since the last meeting, that of Mr. J. Sommerville, of Dunbar, and asked the members to express their sympathy with his relations by standing in silence. This was duly observed.

Correspondence.—(1) From the National Horse Association requesting the Division to become affiliated. The

* Received on January 4th.

President intimated that the Council recommended that the affiliation should be effected, and the meeting concurred.

(*a*) From the National Veterinary Medical Association relating to the proposed change in the Council of the Association. The President explained the conditions, and indicated that in the opinion of the Council a resolution should be sent in the following terms: "That this Division, while agreeing with the proposal to increase the membership of the Council of the National Veterinary Medical Association upon a broader basis, considers that representation in the proportion of one seat on the Council for every 25 members of each Division is preferable to the nomination and election of extra members by ballot."

After considerable discussion, in which Mr. Nairn, Professor Greig, Mr. Gofton, Major R. G. Anderson and others took part, the President's motion was carried unanimously.

Introduction of New President.—Professor R. G. Linton, the retiring President, in introducing the President for the ensuing session, briefly thanked the members for the support which they had given him during his term of office. That day—March 13th—was one of interest because it was 41 years, all but 4 days, since the Division was founded (*i.e.*, on March 17th, 1888). The list of original members contained three names of gentlemen who, he was pleased to say, were still active members of the Division, and he would like to read them out. They were: Mr. John Aithen, of Dalkeith; Mr. T. M. Inglis, of Forfar; and Mr. J. Borthwick, of Kirkliston. The late Mr. Cunningham, of Slateford, was their first President.

He had great pleasure in handing the reins of office over to Mr. W. Nairn, of Blairgowrie, in whose capable hands he felt confident the Division would continue to prosper. He was sure that it was not necessary for him to introduce Mr. Nairn, who was so very well known to every member, and he would therefore not detain them longer but just ask Mr. Nairn to occupy the Chair which he was vacating.

Mr. Nairn then took the Chair, amid applause. He said he wished first of all to express his appreciation of the services which Professor Linton had rendered to the Division both as Secretary and as President. He was sure he was expressing the feelings of the meeting when he said how pleased he was to find him back again among them in health and strength. (Hear, hear.) He would ask the members to accord to Professor Linton a specially hearty vote of thanks for the excellent way in which he had conducted his presidentship during the past two years.

This was carried in an exceedingly hearty fashion, and Professor Linton briefly replied.

Election of New Members.—The gentlemen who were nominated at the last meeting, viz., Major E. D. S. Robertson, Messrs. W. Weipers, W. P. Blount and J. Cameron, were declared elected to membership.

The President, W. Nairn, Blairgowrie, then delivered his presidential address, as follows:—

Research and the Practitioner.

I believe it is generally accepted that your President need not necessarily confine his remarks to any single subject but is permitted, if he choose, to ramble at large throughout the whole range of veterinary science and professional politics. Let me assure you, however, that I am content to essay a far less ambitious task. I propose, from the point of view of the general practitioner, to emphasise his claim to the assistance of research. In this respect I would refer to a generally admitted defect in the existing scheme of veterinary education: how it may be redressed; finally, I desire briefly to survey a fruitful field of exploration in part marked by the triumphs of research, but in a larger part awaiting successful investigation.

Research, and still more research, is hailed as affording the great hope of the future and, like the philosopher's stone of old, it is expected to change our modest present into a golden future.

I feel sure it will readily be admitted that, while the general practitioner may be the Cinderella of the profession, he nevertheless performs a vital function in the activities which justify the existence of the profession.

There is, therefore, no occasion for any hesitation on my part in putting forward a plea for some organisation whereby the practitioner would have opportunity to extend the limits of his knowledge, thus enabling him to be of more service to the community, with a consequent raising of his professional status.

In the past, we must admit that, of necessity, we have confined our activities too much to the field of clinical work and have not given adequate attention to the wider field of preventive medicine, wherein we should strive to be masters. We are not entirely to blame for this state of affairs, as hitherto agriculture has not recognised its obligation to join forces with us and persuade political parties that financial assistance to that end is required before it is possible.

Although our incomplete mastery is our heritage rather than our fault, we are none the less under obligation to strive to our utmost to remove any ground for criticism as time proceeds. How can we contribute to the advance of our profession? Can we do it by a co-operative effort to raise fees? I fear co-operative efforts to that end will fail. Rather let us co-operate to raise, instead of fees, our contributions to science generally, by extending in our own realm the deeper study of disease.

The recognition to-day of the truer etiology has made more claimant the need for the assistance of the various diagnostic aids which science can extend to the practitioner. Busy practitioners have not time for the full utilisation of these aids and frequently if we have the time we have not the facilities.

I feel strongly that the installation of a central department to help the practitioner in diagnosis and in many other ways expose around him the wider aspect of disease, would make him a better servant of the community and a more satisfied practitioner of veterinary medicine.

Compared with the members of the medical profession, so adequately provided with ample clinical material in their large hospitals, we are at a serious disadvantage. Our teachers have not the opportunity to give such a complete rounding off to the training of the student as they would wish. They admit it is only possible to impart the fundamentals of the training, leaving the completed structure of our knowledge to be built up painfully in later years.

It appears to me that there is as much need for post-

graduate training for practitioners as for devotees of any other branch of veterinary science.

Many of us would have benefited throughout our career if we had had access to a central laboratory where, at small cost, we could have received assistance in diagnosis. It may appear to some that facilities to this end exist at present, but unfortunately these have usually required a golden key to open the door to them.

The profession would benefit if it possessed a department to which it could apply for assistance, not only in purely laboratory diagnosis, but also for guidance in obscure clinical problems. Such a department would require to start either with an experienced clinician on its staff or with a panel of practitioners to whom it could refer clinical problems. Such a clearing house for practitioners' troubles would gradually exert an influence for good throughout the area covered by its activities. Its influence in directing the young practitioner's views during the period of crystallisation would, if the institute were well directed, form an excellent post-graduate training. The Animal Diseases Research Institute in Edinburgh would provide a splendid centre for the establishment of such a unit, and the interests of both departments would be much improved by the innovation. The clinical assistance the department of clinical research would provide would compensate for the laboratory facilities granted by the Institute. Graduates who desired could spend a period in the department and recast their views on many professional problems.

There are many diseases which provide practitioners with daily problems and which are not of sufficient economic importance to warrant a big research effort, but which would benefit very much if the varied views of practitioners were correlated and the results recorded for the benefit of all. The young practitioner, in the assurance that he had behind him the collective wisdom of the profession, would approach the day's task with greater confidence and enjoyment. If we are not to establish some such department, I fear the advance of clinical knowledge in our profession will not make very rapid progress and we risk losing our place in the sun. Every day we see evidence of other branches of animal husbandry encroaching on the veterinary section.

While I appeal for some innovation, as mentioned, for the benefit of practitioners, I feel sure research workers in Scotland, who are dealing with research into the various problems affecting animal husbandry, would soon appreciate the advantage of a department which could readily offer them the fruits of field observation in a form unattainable otherwise. More and more as these workers seek to penetrate the mysteries of their problems they realise that the field observer is an important individual in their team.

It would be necessary, for the achievement of our purpose, to cultivate the sympathetic interest and support of agriculture, otherwise I fear financial difficulties would be a serious handicap. The profession in many aspects of its work might do more to demonstrate more clearly that its aims and interests coincide with those of agriculture.

In briefly discussing the formation of a department to deal with the daily round of our activities, it is not suggested that its labours should interefere with those of the present research institutes in their efforts to elucidate the etiology, etc., of various serious affections, the list of which is still too long.

There may be varying values attached to some of the stockowners' ills, but I think it will be conceded that one of the most pressing is tuberculosis. Its menace to public health, added to its economic loss, compels us to direct serious attention to an effort to mitigate its affliction. The problem may appear a difficult one, but that is no reason why we should fold our hands and continue to deplore its ravages.

In continuing the discussion on tuberculosis which took place in Glasgow recently, there were unworthy suggestions in agricultural circles that it was for our material ends that we were moving in the matter, but practitioners realise that the eradication of tuberculosis will tend to reduce the earnings of the profession, as we have found there is less need for the veterinary surgeon to attend minor ailments in a tubercle-free herd.

The operations of the Milk Designations Order already afford evidence of the feasibility of clearing a dairy herd of tuberculosis in cases in which the herd is restocked only by breeding, but the whole complexion of the problem is found to change when the practice is to renew the stock by purchase. In such cases it will need a stout heart and a deep purse to face the worries and disappointments incidental to the effort.

In respect of tuberculosis, the difficulty is not to find out more about the causal factor, but how to utilise the knowledge we possess most successfully and economically. Obviously the line of effective attack must be determined by the greatest probability of success at the least expense; not forgetting, of course, that any method which interferes too seriously with the food supply of the community cannot be regarded as suitable. Whether it shall be immediate eradication by the tuberculin test or by Bang's isolation system, or by the use of Calmette's vaccine, can only be determined by a scientific weighing of the data available.

An effort to reduce the incidence of tuberculosis has been made by the Tuberculosis Order, which aims at the removal of clinical cases, thus reducing the risk of quantity or mass infection. Experience favours the view that such gross infection leads to an increase in the number of acute and fatal cases among the animals exposed to it. If well administered, the Order should have this result and also develop an organisation which will more easily adjust itself to an extension of the work later. We must admit that up to the present the Order has not succeeded in arresting the traffic in tuberculous animals, and we have a great deal of educative propaganda to carry through before it will do so.

It is not possible to discuss tuberculosis without referring to the tuberculin test—an excellent aid to early diagnosis, but one which causes a great deal of worry and annoyance to members of the profession.

There would seem to be need of further fundamental research on this test. Perhaps the cause of most complaint lies in the layman's view that the test should be completely infallible. The scientist who looks forward to such an ideal is undoubtedly an optimist. The potency of the tuberculin may be determined, but we do not know and cannot determine the various factors in individual animals which may vitiate the result of the test. It may

well be doubted whether we can ever reach the stage when we can determine and then reduce the disturbing factors to orderly behaviour.

But, as things are, the subcutaneous, intradermal, intrapalpebral and ophthalmic tests have each their champions. They also have their margin of error which, however, can be reduced to a very small percentage by the observance of careful technique.

A complication of the tuberculosis problem arises—in the traffic in cows between Ireland and Scotland. This is also a factor aggravating the losses from that serious affliction of breeding cows, contagious abortion. The economic loss from the disease will approach closely that from tuberculosis when regarded nationally, but when considered from the individual owner's point of view it appears much more serious than tuberculosis.

As mentioned, this is one of the troubles which owe their severity to the traffic in cows and one wishes it were possible to stop the indiscriminate purchase of these animals except to non-breeding dairies or farms. We might profitably discuss this question with the leaders of agriculture and point out that, if they would control these diseases, they must first control the indiscriminate traffic largely if not wholly responsible for the alarming prevalence of this disease.

Examining cows under the public health legislation, one is struck by the serious amount of loss the dairying industry suffers from the sequelæ of mastitis, and the problem presented imperatively calls for further research.

By the way, it is gratifying to have learned that research work on this problem is being carried out at Reading. The profession, I am sure, will await the results with a generous hope for its success.

The veterinary profession has cause to feel justly proud that the brilliant research of Laidlaw and Dunkin has given us a reliable prophylactic for canine distemper. It seems a pity, however, that the cost of preparation should be so high as to prevent our poorer clients getting benefit from it.

Braxy and lamb dysentery have yielded a great part of their secrets to persistent study, and it is now possible to limit the ravages of these troubles by their respective vaccines and sera.

The cost of lamb dysentery vaccine in a large flock is a formidable item of expenditure, but hard-headed agriculturists consider it a good investment. Perhaps science will tell us, some day, how we may remove the predisposing factors which favour outbreaks of this disease, and thus enable us to avoid them.

Scrapie, louping-ill, grass sickness, foot-and-mouth disease and Johne's disease have all been subjected to considerable study and much fresh knowledge has been recorded regarding them, but much more remains to be done before the results will have distinct economic value.

Our research problems are not confined to diseases of bacterial origin; rather do we find an increasing list of diseases ascribed to what are termed deficiency causes. These deficiencies may be in the mineral components or the vitamin contents, two factors so interdependent that it is difficult to determine sometimes which is the greater deficiency. Again, the influence of defective hygiene is so potent that all the symptoms of mineral deficiency may arise (as we see in rickets) although the dietary is adequate in calcium and the animal is excreting considerable calcium, being unable, from a defective metabolism, to fix it in his tissues. Research has shown that lack of vitamin "D" in dietary and lack of sunlight favour this condition. In clinical work we find that an ill-balanced dietary and lack of exercise are also of considerable influence in the development of rickets.

When Research announced that disease arose from mineral deficiencies, many commercial firms quickly made efforts to exploit the findings, and I think we have a duty to protect our clients from excessive exploitation. As the guardians of animal health, it behoves us to see that the hygienic conditions of young stock are satisfactory. If the conditions are adequate I feel sure it will then be found that the young animal needs few additions of purchased minerals.

In this connection, I should like to refer briefly to some excellent observations made by two Edinburgh teachers, Professors Dryerre and Greig, on the calcium content of the blood of cows in health and while suffering from milk fever. This marks a step forward in our conception of a previously obscure etiology. Much work remains to be done to show that the calcium fall is the actual cause of the disease and not merely a secondary phase arising from some other primary cause.

In these rambling remarks I have referred to a number of problems awaiting solution by the various research teams and I should like to close with a brief reference to another aspect of the question, because if its ideal materialises, it will have an important influence on Research and the veterinary profession. It is the suggestion thrown out by Dr. Crew that his department is to tackle the question of eradicating disease once and for all by eliminating the possible victims of it.

This looks like the doom of our profession, but these results will not arrive hurriedly, so the next few generations of our profession need not despair awhile.

We may be quite sure that when science has reached this level of achievement it will most likely find that conditions of domestication continue to evolve new problems for posterity.

There is no final stage to scientific truth. What we believe to be the ultimate truth is but the limit of our vision. Let us then, as a profession, preserve the fresh curiosity of youth, always trying to see the light of knowledge beyond the grey horizon. (Applause.)

Mr. Gofton rose to move a hearty vote of thanks to Mr. Nairn for his inspiring address. He was sure that there was nobody who would not agree with him in emphasising the two extreme menaces that still existed in the form of tuberculosis and contagious abortion, especially when both were present in the same cow. The motion was carried with enthusiasm and Mr. Nairn briefly returned thanks.

Formaldehyde solution (formalin) is doubtless the most active of the internal antiseptics and the least harmful in effective antiseptic doses. This has now been proved by the Frost internal treatment of mastitis in cows; by the incontestable value of urotropin (now called methinamine) in urinogenital troubles; and especially by the quick action it exerts when given intravenously to horses affected with purpura hæmorrhagica.—*North American Veterinarian.*

Southern Counties Division, N.V.M.A.*

Meeting at Southampton.

The Scheme proposed by the Scottish Branch of the N.V.M.A. for the eradication of Bovine Tuberculosis was discussed by the Southern Counties Division, N.V.M.A., at a meeting held at the South-Western Hotel, Southampton, on Thursday, December 19th, and a resolution was passed recording the meeting's approval of the Scheme.

The President (Captain H. C. Rockett, of Salisbury) presided and the others present were Colonel J. A. Aitken, and Messrs. W. Caudwell, H. Edie, R. E. Klyne, E. S. Martin, A. J. Moffett, C. Pack, and J. Tutt, together with the Honorary Treasurer (Mr. E. Whitley Baker), and the Honorary Secretary (Mr. John Facer).

Apologies for inability to attend were announced from Miss Cust, Professor Hobday and Messrs. G. P. Male, W. F. Maynard, J. H. Ripley and Colonel P. J. Simpson.

Resignations.—Three resignations were announced, namely, those of Captain Fox, Mr. J. Willett and Mr. Bernard Gorton. Captain Fox, Mr. Facer explained, had been transferred to the Glasgow district, but in his letter tendering his resignation he wrote that he was looking forward to residing in the South of England again, when he hoped he would be permitted to renew his acquaintance with the Society.

The resignations of Captain Fox and Mr. Willett were accepted with regret, and the Honorary Secretary was requested to inform Captain Fox that the Society would be equally pleased to see him a member again on some future occasion. It was also unanimously agreed that Mr. Gorton should be asked to reconsider his decision and to allow his membership to continue.

Election to Membership.—The nomination of Colonel J. A. Aitken for membership, which had been made at the previous meeting, was unanimously confirmed and the President extended him a cordial welcome on behalf of the meeting.

International Veterinary Congress.—The next business on the agenda was the appointment of two representatives to next year's International Veterinary Congress.

Mr. Tutt thought the President should be one and that he should be accompanied by their Honorary Secretary, but the President said he gathered that both Mr. Facer and himself would be *ex-officio*, and it was thereupon decided that the Division's two elected representatives should be Mr. Whitley Baker and Major Martin.

Royal Sanitary Institute Congress.—Nominations were also invited for two delegates to the Royal Sanitary Institute Congress at Margate in the summer, and Major Martin and Mr. R. E. C. Bullen were chosen to represent the Division.

Discussion on the Scottish Scheme for the Eradication of Bovine Tuberculosis.

This discussion was, on the suggestion of the President, opened by Major Martin, who remarked that any scheme for the eradication of such a disease as that must be a good thing. Whether the country could afford the cost just now was another matter, but a large amount of money was voted every year for the use of the Ministry of Agriculture and some of that money could not possibly be devoted to a better purpose than that. The trouble about tuberculosis was that there was no uniform system of inspection throughout the country. In one county they might have an admirable scheme whereby every dairy was periodically inspected, and in the adjoining county there might not be any proper system at all. Therefore, any scheme which would embrace the whole country was deserving of every encouragement. His own idea—he did not suggest that it was original—was that there should be a panel of practitioners for dairy cattle, and he also thought that farmers should be allowed to choose the practitioner in their area for whom they should send. He believed there was an objection on the part of many farmers to the presence of the police, but he took it that if this Scheme became operative there would be an administrative Veterinary Officer at the County headquarters who would make the final tests.

The President remarked that he thought the presence of the police at examinations was a matter that rested largely with the County officials. He had to work two districts in his own County of Wiltshire. In one, the farmers practically saw nothing of the police and it was left entirely to himself, whereas in the other district it was the practice of the police to attend. It was quite possible that farmers did resent the presence of the police, but he thought that was a difficulty which could be easily surmounted. He, himself, could not see why they wanted the police about. He also thought there was a good deal of room for improvement in the scale of compensation, which in many cases was quite inadequate.

Major Martin remarked that they wanted a scheme which would give them the power to inspect, and the President replied that the trouble about this was that the existing Milk and Dairies Order was not enforced as it should be in many counties. Personally, he thought this Scheme was a very good one if it could be worked, but it was going to be a great expense. He quite agreed that the final test should be carried out by a more or less central body and he also thought it should be made illegal to use any tuberculin that was not standardised.

Mr. Facer did not think the Scheme need prove so very expensive, at any rate to start with. The idea seemed to him to be to get a tuberculosis-free area as a nucleus and to extend the work round that area.

Mr. Caudwell thought the Scheme was too piecemeal and that if anything was done it would have to be through the Ministry of Agriculture.

Colonel Aitken observed that, in his view, the local practitioners would be acting under the Ministry.

Major Martin agreed that they wanted the Milk and Dairies Order more systematically enforced, and he reminded the meeting that their Society had passed a resolution on this matter, which he believed was very sympathetically received.

Eventually it was decided, on the proposition of the President, seconded by Mr. E. Whitley Baker, "That this meeting approves of the Scheme for the eradication of Bovine Tuberculosis, as proposed by the Scottish Branch of the N.V.M.A., and gives it its full support."

The Honorary Secretary reported that the Honorary Treasurer and himself had been carefully through the list of members with a view to eliminating those who had,

* Received on January 4th.

from various causes, ceased to be effective members. The result was that they had got the list down to about 36, although there might be one or two other names which they should retain on the books.

R.A.V.C. Journal.—On the suggestion of the President, Colonel Aitken called attention to the value of the *Army Veterinary Corps Journal* from a professional point of view, and his remarks were endorsed by several of the members, who testified to the comprehensive and interesting character of the contents.

Next Meeting.—It was decided to hold the annual meeting at Winchester, the date to be left to the Honorary Secretary to settle with the President, and Captain Rockett intimated to Colonel Aitken that in all probability they would accept his invitation to visit Tidworth during the coming summer.

J. Facer, *Hon. Secretary.*

Notes and News.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Jan. 20th—Meetings of the Finance Committee, N.V.M.A., 3.45 p.m., and Editorial Committee, N.V.M.A., 4.30 p.m., at 10 Gray's Inn Square, W.C.1.

Jan. 30th—Meeting of the South-Eastern Division, N.V.M.A., at Tunbridge Wells.

Jan. 31st—Meeting of the Yorkshire Division, N.V.M.A., at Leeds.

Jan. 31st—Issue of overseas Voting Papers, R.C.V.S. Council Elections.

Feb. 1st—Meeting of the Scottish Branch, N.V.M.A., at Perth.

Feb. 6th—Meeting of the Central Division, N.V.M.A., at 10 Red Lion Square, W.C.1.

Personal.

Will.—Rees, Mr. David, J.P. (79), of Brynhedw House, Tylorstown, Glamorgan, for 58 years in the service of Messrs. D. Davis and Sons, of Ferndale, as veterinary surgeon (net personalty £8,837). £9,095.

. . . . . .

An Inveterate Traveller.—It will be no surprise to his many friends in the Midlands to know that Mr. L. C. Tipper, of Birmingham, is enjoying another jaunt. A New Year message to us states: "I write on the eve of my tour with the Empire Farmers' party to New Zealand and the Antipodes. Sailing S.S. 'Remuera' on the 17th."

. . . . . .

Appointment.—Among the appointments made by the Secretary of State for the Colonies during the month of December, 1929, was that of Mr. C. P. Downes, M.R.C.V.S., D.V.S.M., as Veterinary Officer, Uganda.

R.C.V.S. Obituary.

Easte, P., 26 Palace Street, Buckingham Gate, S.W.1, graduated London, December 17th, 1890, died January 8th, 1930, age 62 years.

Bridge, William Henry, 9, Bibby Road, Southport, Lancs., graduated N. Edinburgh, April 24th, 1878, died January 9th, 1930, age 79 years.

The following appeared in the Obituary column of *The Times* of January 9th, 1930:—"Gray.—On January 8th, 1930, at Nantz House, Dagenham, Essex, Victoria Hastings, widow of Alfred Gray, and eldest daughter of the late William Farrow, M.R.C.V.S., in her 93rd year.

William Farrow qualified from the Royal Veterinary College, Camden Town, N.W., on February 19th, 1830. There was no R.C.V.S. until 1844. Mrs. Gray had three brothers M.R.C.V.S., one 1852, the other 1861, and the other 1865; also a nephew who qualified in 1881. She now has a great nephew at the Royal Veterinary College.

Capt. P. J. Sheil, M.R.C.V.S.

The *Dublin Evening Herald* of January 7th contains the following reference to the death of Captain Sheil:—"Sympathy is extended to the relatives of Captain Patrick J. Sheil, M.R.C.V.S., late of the Royal Army Veterinary Corps, who died at his residence, St. Anne's, Castlewarden, Rathcoole, Co. Dublin, yesterday. The late Captain Sheil, who was 41 years of age, joined the R.A.V.C. shortly after the outbreak of war in 1914, having qualified two years previously. He was a son of the late Mr. Edward Sheil, a member of Dublin County Council, and brother of Mr. John J. Sheil, solicitor. He served in France for three years, and was so badly gassed that he developed bronchial asthma and was invalided from his Corps. His ailment, in consequence of its cause—the inhalation of noxious gas—was not amenable to the normal treatment, and eventually resulted in his death.

"Captain Sheil took an active interest in the organisation of the milk industry in County Dublin, and was a member of the committee of the proposed Clondalkin creamery. He enjoyed an extensive practice as veterinary surgeon in Co. Dublin and Co. Wicklow. He leaves a widow and two young children."

Army Veterinary Service: Movements of Officers.

Colonel A. Olver, C.B., C.M.G., F.R.C.V.S., is at present on short leave in this country, from India

Major F. C. O'Rorke, C.M.G., F.R.C.V.S., returned to Camberley for duty on the 10th instant.

Major J. Robertson arrived home from India on the 10th instant, and has been posted to Edinburgh for duty.

The Artificial Insemination of Mammals.

Errata.—The caption under Fig. 1, page 27, col. 2, of the translation of Prof. Iwanow's article (*Veterinary Record*, January 11th, 1929) refers to Fig. 2, page 28, col. 1, and that under Fig. 2 to Fig. 1.

University of London: Examinations in Veterinary Science.

December Pass List.

Preliminary Examination: Ince, Eric Benson (Royal Veterinary College, London).

Intermediate Examination (Part 1.): Hignett, Samuel Leslie, and Pande, Gajanan (Royal Veterinary College).

Intermediate Examination (Part 2.): Hobday, John Henry Newbold (R.V.C.); Stobo, Thomas Whyte (University of Glasgow and R.V.C.) and Watts, Percival Stuart (R.V.C.)

B.Sc. (Veterinary Science) Examination: Hole, Norman Henry; Longley, Eric Oliver, and Polding, John Bede (R.V.C.)

Psittacosis in the Human Subject in U.S.A.

A message to *The Times*, despatched from its New York correspondent on January 12th, states :—

"Two persons died on Friday of psittacosis ("parrot fever"), a woman in Baltimore and another in Toledo, and about a score of other cases of the disease are reported from various parts of the United States. Providence has three cases, Baltimore has four, Toledo has six, and the New York State authorities have under observation two cases of illness at Yonkers, two at Johnstown, and two in New York City.

"It became known yesterday that an Argentine parrot from which a woman in Baltimore contracted a fatal attack of fever was bought in a New York store and sold in another store in Baltimore."

So-Called Post-Parturient Dyspepsia of Bovines.

Mr. Oscar Stinson, of Appleby, writes :—

"The subcutaneous method of treatment of the above condition is being successfully carried out this season with the use of the commercial glucose B.P. and, on account of this preparation containing dextrin, etc., a dose of eighteen ounces (fluid) dissolved in a quart of boiling water is employed and injected (at about body temperature) at three points on one side of the neck. In severe cases it is advisable to repeat the dose in about four days on the other side of the neck, if the practitioner is not using Rothera's test solution as a guide.

In the oral method of treatment (*Veterinary Record*, December 21st, 1929, page 1115) the cheap commercial glucose B.P. is also used.

"To facilitate the administration of the necessary quantity in the subcutaneous method, an enema syringe is used with a large bore needle attached, such as is used for taking samples of blood from the larger animals. The needle is pushed well under the skin and slowly withdrawn, to avoid the escape of any of the injected solution."

The Weinberg Casting Pen.

"We understand," says the *Jewish Chronicle* of January 10th, "that Professor Hobday's Committee of experts will assemble at the Islington Abattoir next Tuesday morning for the final demonstration of the Weinberg Machine. This test will follow the durability test which, it will be recalled, was held recently. The Hobday Committee will proceed to draw up their report after Tuesday's demonstration."

Living plants may become useful in the detection of poisons of animal origin, such as snake venom. Dr. David I. Macht of Johns Hopkins has also demonstrated that living plants may serve as laboratories for the diagnosis of disease. Thus the effect on plants of a toxin in the blood of pernicious anæmia patients serves as a convenient test in differentiating between pernicious anæmia and related conditions.—*Science.*

Intravenous injections of glucose are given as a practically routine measure in human surgery in preparing enfeebled patients for the ordeal of a serious surgical operation. Moreover, where morphine is given as a preliminary anæsthetic to the administration of chloroform, a dose of glucose should be given before or immediately after the operation (*Ravdin. J. A. M. A.*, Oct., 19th, 1929) as both of these drugs exert a disturbing action on normal glycæmia, and the latter causes damage to the liver parenchyma which glucose prevents and rapidly regenerates.—*N. American Veterinarian.*

The Editor acknowledges the receipt of the following :—

Report of a meeting of the Midland Counties Division, N.V.M.A., from Mr. H. J. Dawes, Hon Secretary. Communication from Messrs. J. C. Gaunt (Scarcroft) and E. Brayley Reynolds (Newmarket).

"Fifteen Years After."

It is commonly said that public memory and public gratitude is but short-lived. That may be true in the majority of cases, but there is at least one splendid exception, and that is in connection with the beneficent and wonderful work that has been accomplished on behalf of perhaps the greatest sufferers from the World War—those men of the Imperial Forces who lost their sight because of the gallant part they played therein. The Fourteenth Annual Report of St. Dunstan's, which lies before us, bears the title "Fifteen Years After," and it forms a summarised historical survey of all those years since the late Sir Arthur Pearson undertook his first labours on behalf of the first few blinded men who had returned from the battlefields.

The report pays the highest tribute to the sustained and generous support which the Organisation has received from people all over the Empire ever since its first efforts were put in hand. The work of re-building the whole lives of the men whose welfare it has taken in charge has been carried out with a completeness and efficiency which has aroused world-wide admiration. It is good to know that purely voluntary financial support has alone made that Empire-wide work possible, and it is surely safe to believe, as the report confidently expresses it, that "all will be glad of the share they have taken in making St. Dunstan's work possible, and will continue to contribute their quota until they are assured that no further help is needed."

In the practical and thoroughly businesslike manner which has ever distinguished the work of this Organisation, an authoritative and exhaustive inquiry was made last year to estimate as closely as possible what needs to be the extent of that future help and for how long it will be required. That investigation, made by a leading actuary, showed that if St. Dunstan's continued to receive its present measure of financial support it would be enabled, within the next fifteen years, to set aside from its necessary annual expenditure on its men, a sum which would provide a capital endowment which would make further appeals unnecessary and yet ensure the present standard of benefits to every war-blinded man until his life's end.

The accounts and balance sheets printed with this year's report provide in themselves striking evidence of public approval of St. Dunstan's taking this course, for there is a surplus of income over expenditure which has permitted the first step towards endowment to be taken.

The text and picture pages of the report will be of universal interest, not only to those of us who recall the strain and suffering of the Great War, but to those of the younger generation to whom those dark years are but a childhood memory. We read of the first beginnings of the work in a house in Bayswater Hill, lent to Sir Arthur Pearson to house but six blinded soldiers and the staff to care for them, and pen and picture put before us in vivid narrative form the tragically rapid growth in the numbers of men, the vast increase in the accommodation and staff required to look after them, the wonderful success achieved in building their lives anew, in finding outlets for the skill with which they had mastered many crafts and occupations, and finally the present position of the 1,907 officers and men and the 4,977 wives and children who constitute St. Dunstan's great community to-day.

The report is illustrated throughout by many photographs depicting every phase of life at St. Dunstan's, many of which are of real historic value.

Everyone who has played some part in helping forward the great work of St. Dunstan's—and who has not?—cannot but be moved and stirred by this wonderful record of Victory Over Blindness, a copy of which will be gladly sent to anyone making inquiry at the Headquarters of St. Dunstan's, Inner Circle, Regent's Park, London, N.W.1.